ENGINEERING NEWS-RECORD

R. E. Lawrence takes top job in WPCF p.48

STEVENS RICE GS

A McGRAW-HILL PUBLICATI

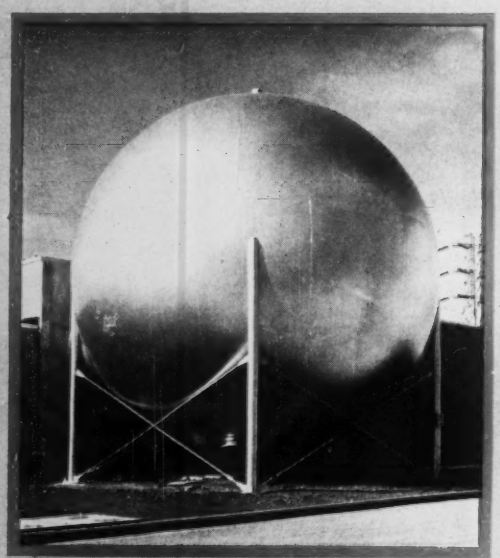
HORTONSPHERE
helps advance missile technology

The flight of a ballistic missile entering the earth's atmosphere is simulated in an Atmosphere Entry Simulator built by the National Aeronautics and Space Administration at Ames Research Center, Moffett Field, California.

Employing the Ames Simulator, space scientists quickly and economically determine in the laboratory whether a specific design can survive re-entry.

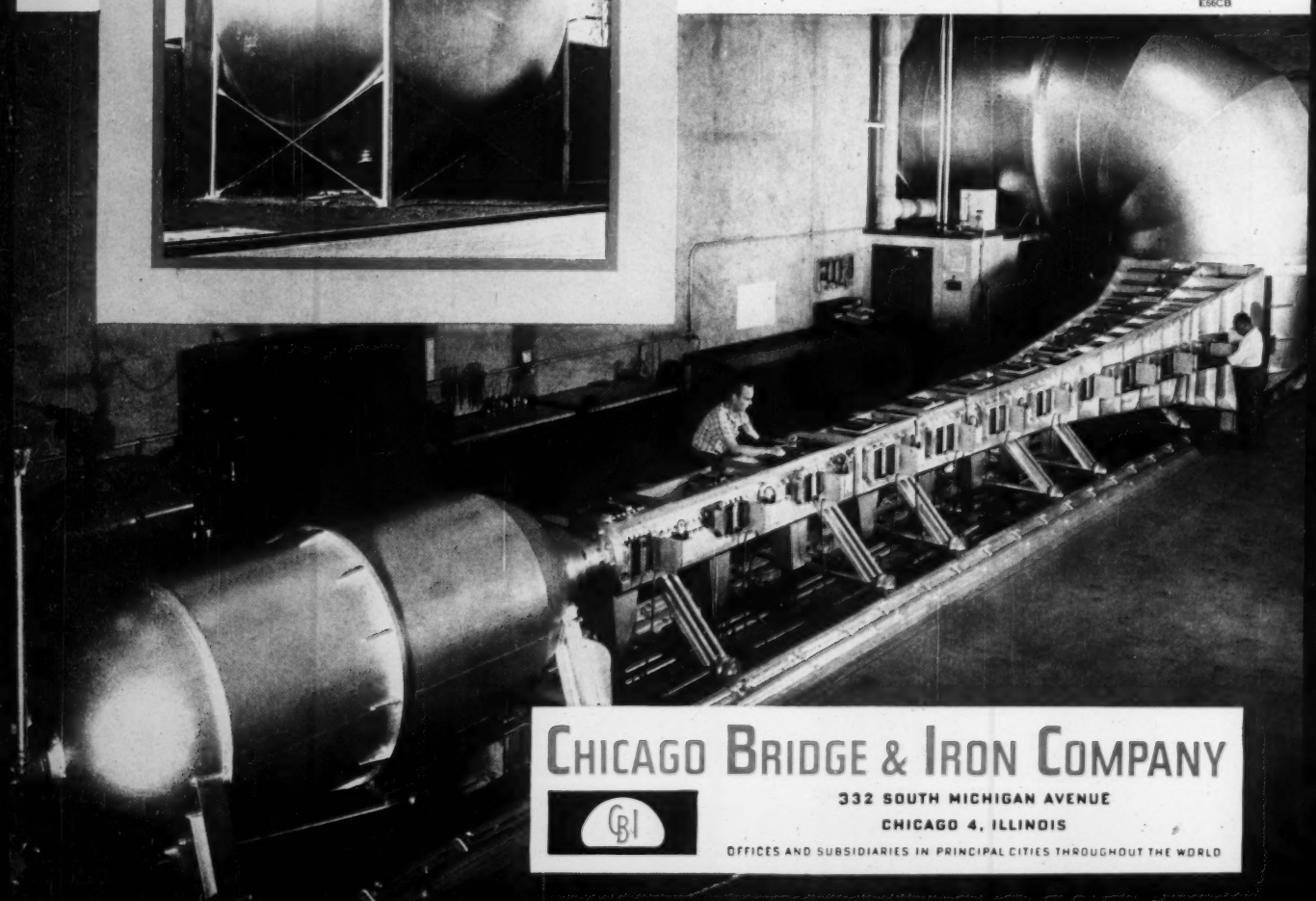
CB&I fabricated and erected several vital components for this important research facility. Included are a 30½ ft. diameter steel vacuum sphere and a 10 ft. diameter duct and elbow.

Craftsmanship in Steel—skillfully developed by CB&I over more than seven decades—builds quality into plate structures for any kind of service.



CB&I fabricated and erected steel vacuum sphere (left) and 10 ft. diameter duct and elbow (below, far right) for the Ames Atmosphere Entry Simulator.

E66CB



CHICAGO BRIDGE & IRON COMPANY

CBI

332 SOUTH MICHIGAN AVENUE

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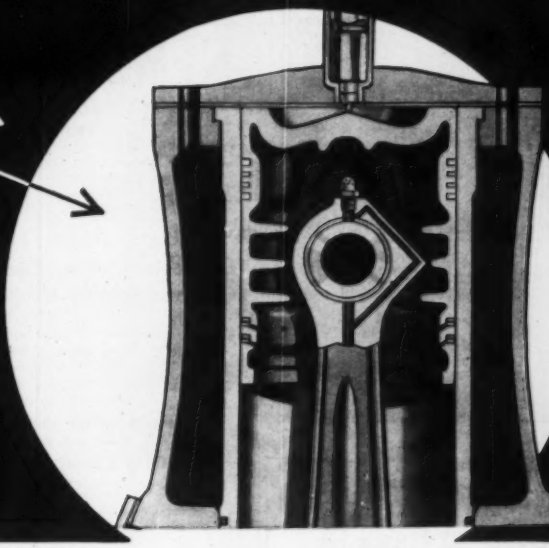
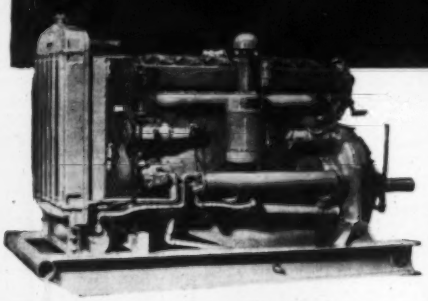
OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Another way you save money with a MURPHY DIESEL





"TRUE" DIESEL OPERATION ASSURES

greater fuel economy
uninterrupted service
faster starting
smoother performance

If you want to get more power from every drop of fuel, smooth-running performance, and long service life, be sure you get a "true" diesel.

Murphy Diesel is a "true" diesel. The cross section above shows the combustion chamber. Note that it is plain and open. There is no pre-mixing chamber, no artificial device to create turbulence and affect combustion. In a Murphy, the unit fuel injector, located in the center of the combustion chamber, sprays completely atomized fuel directly into all parts of the air charge. Since all the fuel burns immediately upon injection into the incandescent air charge, combustion is controlled solely by the unit injector, which in turn is precisely controlled by the hydraulic servo-type governor.

Ask your Murphy Diesel Dealer for proof of Murphy's ability to save you money.

MORE MONEY-SAVING FEATURES

Unit Fuel Injectors serve as both pump and nozzle to provide precise control, faster response and greater fuel economy with minimum downtime, minimum attention.

Hydraulic Servo-Type Governor assures immediate response to load change and protects engine from damage if lube oil pressure drops below a safe level.

Four Valves Per Cylinder have greater breathing capacity for cooler running, and permit higher power output.

Murphy Diesel MP Series engines and power units, 105 to 320 HP; generator sets, 60 to 188 KW; dual fuel engines, 147 to 227 HP; marine engines, 105 to 315 HP.

MURPHY DIESEL ENGINE FEATURES MEAN MORE PROFITABLE OPERATION

MURPHY DIESEL

427-N

MURPHY DIESEL COMPANY

5321 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

12 Floors...90 Days

Symons Steel-Ply Forms in 20'x8' Gang Sections

. . . Re-Used 20 Times on 580 Unit Housing Project

McCarthy Brothers Construction Company, St. Louis, used Symons Steel-Ply Forms to gang form the Anthony W. Webbe Apartments, a public housing project in St. Louis.

Gang forming seemed obvious for this job, but quality of pour was most important. This was to be shear walls from the ground through the 12th floor. McCarthy worked with the Vernon L. Goedecke Company, St. Louis, and the Symons engineering department. Symons engineers recommended a ganged section 20' long x 8' high.

It took 25 days to pour the foundations on the 40 x 600 foot structure and approximately 90 pouring days to bring the building through the 12th floor . . . a total of 196,000 square feet of forming in the walls. 15,000 square feet of Symons Steel-Ply Forms were re-used approximately 20 times.

Complete *housing project story* available on request. Symons Steel-Ply Forms can be rented with purchase option.

NEW Bolt for Gang Forming

Permits the ganging of any size Symons Form with regular hardware. Now you can secure all the forms required, together in sections, move the sections in place, insert the ties and the unit is ready for a pour.

COMLPETE INFORMATION AVAILABLE ON REQUEST

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EIGHTY-SIXTH YEAR OF PUBLICATION

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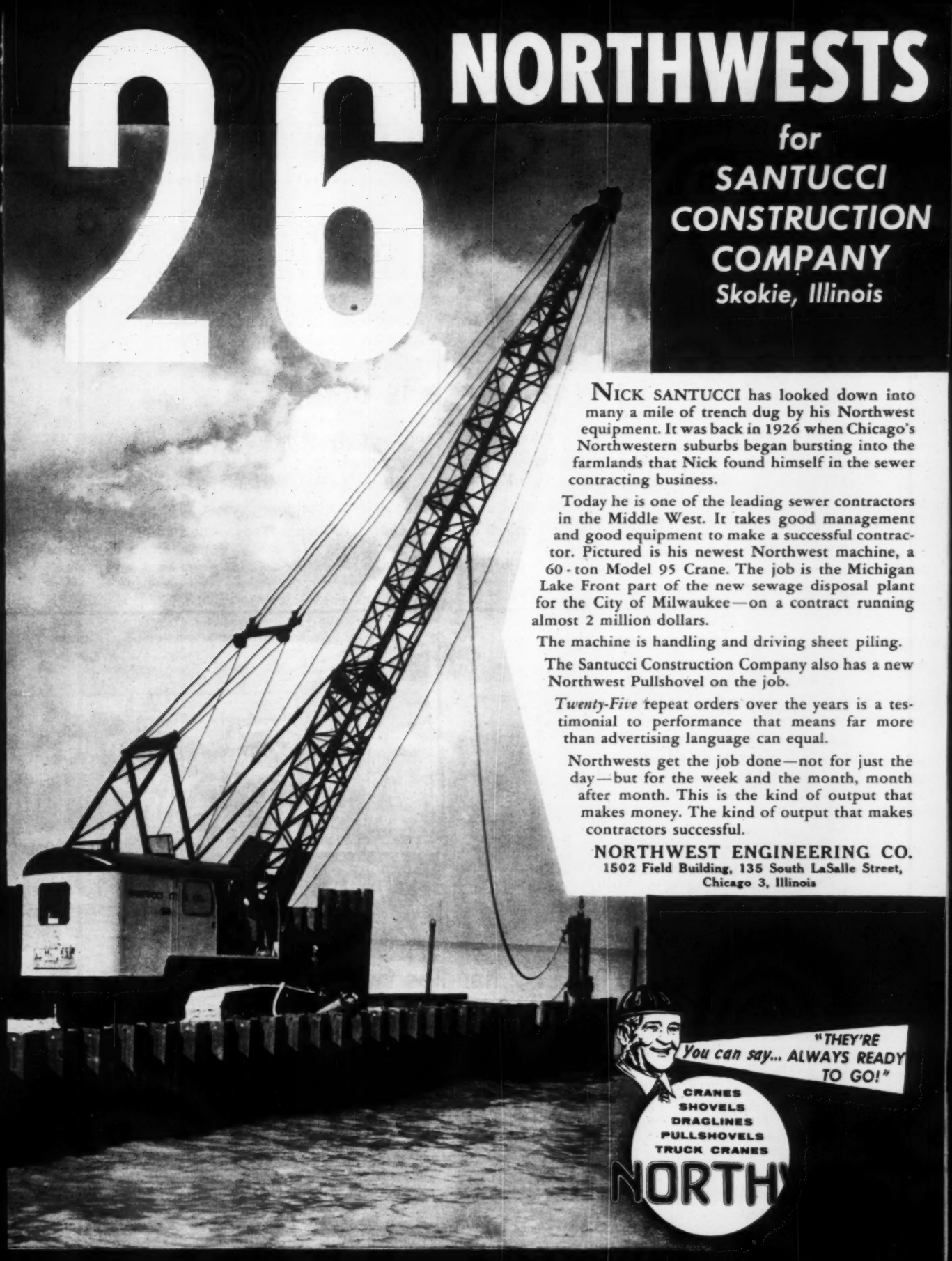

26 NORTHWESTS
for
SANTUCCI
CONSTRUCTION
COMPANY
Skokie, Illinois
NICK SANTUCCI has looked down into many a mile of trench dug by his Northwest equipment. It was back in 1926 when Chicago's Northwestern suburbs began bursting into the farmlands that Nick found himself in the sewer contracting business.
Today he is one of the leading sewer contractors in the Middle West. It takes good management and good equipment to make a successful contractor. Pictured is his newest Northwest machine, a 60-ton Model 95 Crane. The job is the Michigan Lake Front part of the new sewage disposal plant for the City of Milwaukee—on a contract running almost 2 million dollars.
The machine is handling and driving sheet piling.
The Santucci Construction Company also has a new Northwest Pullshovel on the job.
Twenty-Five repeat orders over the years is a testimonial to performance that means far more than advertising language can equal.
Northwests get the job done—not for just the day—but for the week and the month, month after month. This is the kind of output that makes money. The kind of output that makes contractors successful.
NORTHWEST ENGINEERING CO.
1502 Field Building, 135 South LaSalle Street,
Chicago 3, Illinois
"THEY'RE
You can say... ALWAYS READY
TO GO!"
CRANES
SHOVELS
DRAGLINES
PULLSHOVELS
TRUCK CRANES
NORTH

LUBE LOGIC

These four tips

Keeping equipment on the job 92% of the time is an achievement anywhere. But when you can do it while operating in sandstorm country, over 12% grades out of a 300′ deep pit to an additional 200′ to top of spoil area, 100 miles from the nearest parts source – and while you're at it remove a million cubic yards of earth every month, it's a record. Maco Construction Co. is doing it right now, and in doing it they've set up such a fine maintenance routine that we think it'll be a help to you to read about it.

What Maco is doing

Maco Construction Co. is stripping the over-burden from uranium deposits recently located in the Gas Hills area of central Wyoming for Western Nuclear, Inc. This is the largest strip mining operation ever attempted in the state, and calls for the removal of 25,000,000 cubic yards of over-burden. In this large open pit, the uranium ore lies from 250′ to 300′ below grade.

Maco is using twenty-two scrapers, six push tractors, two bulldozers, two motor patrols and one backhoe on the job. Texaco fuels and lubricants are used exclusively.

Clean-sweep lube rig handles two machines at once

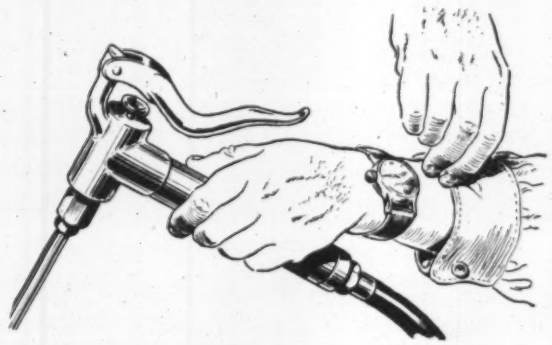
Maco personnel designed and developed a lube rig for this job that is just about as complete as they come – and it has the extra advantage of being able to service two pieces of equipment simultaneously, to make the most of the short period between shifts.

The rig is mounted on a 2 ton van that's kept warm in winter with waste heat from compressor and generator engines. It has two sets of hose reels, one on each side, so that two men can lubricate two different machines at the same time.

Since Maco has a Texaco Simplified Lube Plan, the rig can accommodate sufficient lubricant inventory for the project. Air motors drive the lubricant pumps, and a separate electric air compressor furnishes air. A 25 KW diesel generator set mounted in the van provides power for air compressors, power pumps and the four big floodlights. Maco personnel built the tanks that hold motor oil and hydraulic fluid; transmission and lube grease are pumped direct from original containers.

With this lube rig it's possible for the maintenance crew to lubricate all major equipment in the three hour period between shifts, so no work time is lost.

achieved 92% average availability



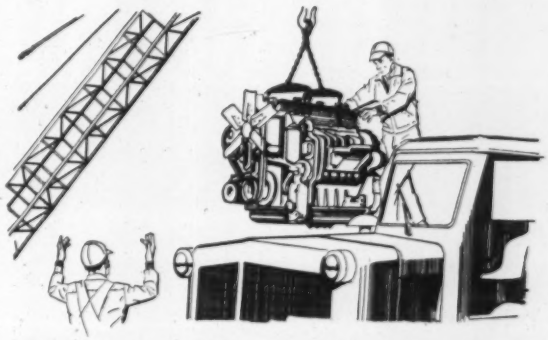
Clockwork lube scheduling boosts availability

Every machine on Maco's spread is serviced every day, in the period between the close of the day shift, at 4:30, and the beginning of the night shift, at 7:30. The 22 scrapers are lined up in a double row, and the mobile rig passes between them. Every machine is lubricated completely, and air filters are cleaned, at the end of every 10-hour shift. Crankcases are drained every 100 hours. Lube interval on gearboxes and torque converters is 2000 hours.

Simplified Lubrication Plan protects 33 major units with only five products

TEXACO SIMPLIFIED LUBRICATION PLAN		
1	Ursa Oil Heavy Duty:	engine crankcases
2	Havoline Motor Oil 10W:	Euclid Torquomatic Drive
3	Universal Gear Lubricant EP:	all gear boxes and final drives
4	Crater 2X Fluid:	open gears and wire rope
5	Marfak Multipurpose:	chassis and track rolls

With their Texaco Simplified Lubrication Plan, Maco gets fast, thorough, systematic lubrication for all major equipment with the smallest possible lube inventory. This inventory simplifies and speeds up application routine because it avoids confusion, minimizes downtime due to misapplication of lubricants, and lets Maco put their lube inventory on the mobile rig for complete on-the-spot coverage.



Replace-don't-repair theory cuts shop time

Although Maco is well equipped to handle emergency repair on the job, they cut shoptime drastically by sticking to an exchange system on major components like engines, transmissions and torque converters. Duplicate spares of these units are kept on hand. Then the defective unit is simply removed intact from the machine and replaced with a new or rebuilt one. All major repairs on engines, transmissions and torque converters are done at the Rawlins shops. Parts are flown in via Maco's own plane from headquarters in Rawlins, Wyoming.

Minimum downtime on equipment is the principal advantage of the exchange system, but not the only one. For instance, engine repairs can all be made in a fully equipped shop, without having to rush or make temporary repairs; and this system also ensures full availability of the field maintenance crew for their routine work.

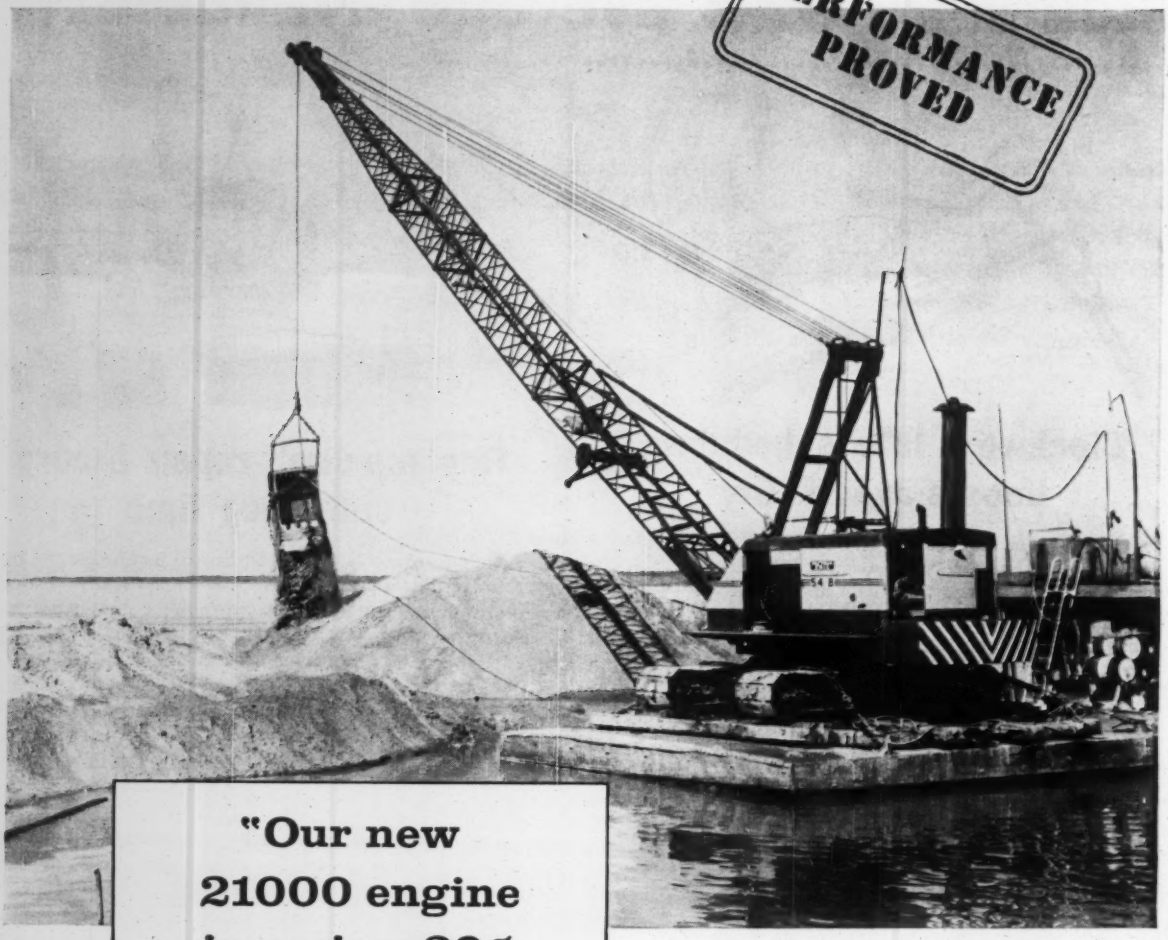
Texaco Lubrication Engineers

There are 2,300 Texaco Distributing Plants in the U. S. ready at any time to help you develop a Texaco Simplified Lubrication Plan for your next job. Since every Texaco Plan is designed to lubricate specific equipment on a specific job, you'll get the best results by consulting a Texaco Lubrication Engineer. Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

TEXACO

Throughout the United States
Canada • Latin America • West Africa

This 21000-powered Bucyrus-Erie 54-B and personnel on the barge with it must work in isolated areas for long periods at a time.



"Our new 21000 engine is saving 30% and more on fuel!"

— says spokesman for Sam Carline, Inc.

"We are pleasantly surprised to see how well the 21000 does the job of the larger engine we took out of a 54-B," said Wallace Carline, general manager of Sam Carline, Inc., Berwick, Louisiana. "Then when we found our fuel saving was so great, we were even more sold on it. We have now ordered a second one for another of our Bucyrus 54-B's."

The dragline is mounted on a barge, along with living quarters for the personnel, and operates in back swamps and bayous of Louisiana. Since it must work for long periods in the remotest parts of this country, dependability and a minimum of maintenance are essential. The 21000 has fulfilled every expectation—requiring no attention other than routine maintenance.

If you want performance, fuel economy and dependability like this, let your dealer tell you more about the amazing 21000 and the companion 16000 diesels. Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

***POWER* FOR A GROWING WORLD**

BC-31

GOODYEAR

BEST BET FOR BIG BIDS

Let Goodyear show you ways to cut your tire costs

Competition for big jobs keeps you on your toes. That's why it pays to do everything possible to protect your profit margin. And much of your success on the big jobs rides on the tires you use.

Your Goodyear Big-Tire Specialist knows what problems you face in terrain, roads, climate, schedules and speeds. And he knows which tire is best for each need and how to keep costs in line. When you call him in for an analysis, you are assured his recommendations on tires will come from the most complete line of the world's toughest earth-mover tires.

He's ready with On-The-Job Service whenever you need it. Goodyear Contractor Service means that you can have a tire-maintenance program on-the-job. This service is geared to save man-hours, machine-hours and tire life.

Plus — BIG-TIRE PERFORMANCE
Example: SUPER ROAD LUG

Jounce it over the roughest terrain and the Goodyear Super Road Lug shrugs off flexing, cuts and piercing blows. Reason? This tire embodies new and advanced super-toughening agents that make it super-tough on wear. What's more, rugged 3-T Processed Cord (nylon or rayon) — triple-tempered by Tension, Temperature and Time — give you unequalled tire strength and stamina.

Why not get the full story on the performance and savings that make the Super Road Lug your best bet for big jobs — and details on Goodyear Contractor Service — *before* your next bid. Just call your Goodyear dealer — or write Goodyear, Truck Tire Department, Akron 16, Ohio. Remember, lots of good things come from Goodyear.

Road Lug — T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

World's Toughest Truck Tires by

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

WHEN YOU NEED A BUILDING FAST

Frame it with steel to keep work

Other trades can move in quickly when you build with steel. Fabricated in the shop, structural steel arrives at the site *ready to go into place.* No expensive, time-wasting extra field operations. No form work. No new skills during construction.

In a surprisingly short time, your steel framework is erected. And even before the framework is completed, other trades can get started. Floors, curtain walls, electric wiring, plumbing—everything that makes a building habitable—can be installed more quickly. Your client moves in much sooner.

Your structural steel fabricator can get you all the structural steel shapes you need. And fabricate them just the way you need them. Let him show you what he can do. You'll be glad you did.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

moving

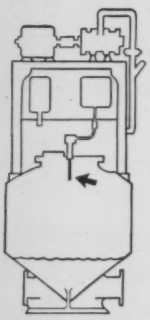
Steel

for Strength
... Economy
... Versatility

NOW...No more Electrode Cleaning!

New ***YEOTRONIC*** Control ... an exclusive feature of Yeomans Pneumatic Ejectors

***YEOTRONIC*®** brings miracle of electronic control to Yeomans Pneumatic Ejectors



Only ONE Short Sensor NO Electrode Cleaning!

YEOTRONIC control replaces the dual-electrode system and its long, troublesome electrode with a single short sensor that requires no attention.

YEOTRONIC is a major breakthrough in the electrical control of pneumatic ejectors. It is not a time-delay relay device...not a time-clock mechanism . . . but a modern transistor-operated unit designed to handle today's wastes without fouling.

YEOTRONIC is available at no extra charge on Shone®, Expelsor®, and Packex® electrically controlled pneumatic ejectors. For complete details, call your Yeomans representative or write for information.

E-6033

Another Step Forward

YEOMANS

1999-1 N. Ruby St., Melrose Park, Illinois

Reader Comment

On ENR's '61 Forecast

SIR—We still believe the 1960s will be a flourishing economic period for the construction business—this despite the doubtful factors that have been manifest during the first half of this year. We are probably suffering to some extent from the uncertainties that always crop up during an election year, but I do not think this is of any real importance.

The planned deflation by the use of tight money also may have been somewhat overdone but now that policy on the part of the government is being reversed; with the ever-increasing need for both hard and soft goods we are rolling up a backlog of construction for the succeeding years.

There is really no such thing as "bargain prices" in construction. All of our costs are fixed—labor, materials, equipment, etc. The only factor not fixed is time. Although a contractor's profit is a variable, we can be sure that the profit margin in 1961 will be low in terms of percentage.

There is no question but that the construction industry's enormous capacity —now at peak—will assure fast schedules and building economies. The McGraw Company is constantly looking for cost-cutting methods, machines, and materials, and we have innovated a few over the years.

Industrial building might well prove to be the "sleeper" in the general construction picture for 1961. We know of several corporations needing new plants but have been holding back for the past few years. They could well act favorably on these plans in 1961. Watch for a rash of plant expansion announcements in January and February.

CLIFFORD S. STRIKE
President
F. H. McGraw & Company—Engineers and Constructors
New York, N. Y.

Navy Directed Erection

SIR—In "Air Force Base Theater Costs $504 per Seat" (ENR Sept. 8, p. 69), you failed to mention that the design and construction is being done under the direction of the Bureau of Yards and Docks, Navy Department. I am the designated officer in charge of construction of this project and my resident officer in charge of construction is Cmdr. C. F. H. Gould.

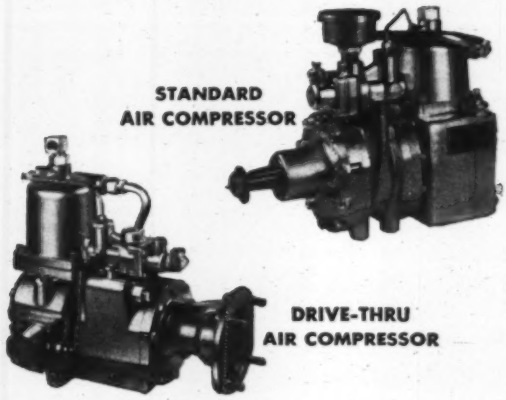
Although the consultant deserves a large share of the credit for this work, considerable effort of many outstanding architects and engineers in this agency and in the bureau contributed to the design.

J. E. REHLER
Captain, CEC, USN
Ninth Naval District
Great Lakes, Ill.

NEED MORE AIR RESERVE

for safer control of off-the-road equipment?

INSTALL Wagner Lockheed ROTARY AIR COMPRESSORS



STANDARD AIR COMPRESSOR

DRIVE-THRU AIR COMPRESSOR

You'll have plenty of air reserve for braking and control when you use Wagner Lockheed Rotary Air Compressors on your equipment. Rotary action, with four impulses per revolution instead of two, assures rapid pressure recovery—ample air reserve.

Rotary operation cools air in compressor and dome before it is discharged into the line. Low discharge temperature prevents carbon formation—reduces fire hazard—lets you use flexible hose for the discharge line. The smooth operation created by thousands of small, overlapping air compression impulses per minute increases belt and coupler life—eliminates severe shock to the drive train. The use of only two sleeve type bearing surfaces adds to compressor life. Bearings have steel-backed, babbitt-lined, renewable inserts.

Wagner Lockheed Rotary Compressors are available in either 9 C.F.M. capacity, air or water cooled; or in 12 C.F.M. capacity, water cooled. Also in a "Drive-Thru" type for diesel engines.

Complete Balanced Systems for your Equipment

Look to *one* source—Wagner . . . for complete braking systems . . . straight air or air over hydraulic. Wagner's wide variety of brake products includes power source, application units, and foundation brakes. REMEMBER, when ordering new equipment, be sure to specify Wagner Lockheed. Full details are yours in Catalog KU-201.

CONSULT YOUR WAGNER AIR BRAKE SPECIALIST

. . . There's one in *every* Wagner Branch. He is a factory trained expert who can assist you with your air brake program.

Wagner Electric Corporation
6380 PLYMOUTH AVENUE, ST. LOUIS 33, MO.

WK60-2

LOCKHEED BRAKE PARTS, FLUID, LINING and LINED SHOES • AIR HORNS • AIR BRAKES • TACHOGRAPHS • ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

PUBLIC WORKS

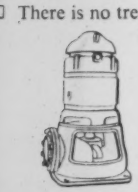
Match your wits against this team of

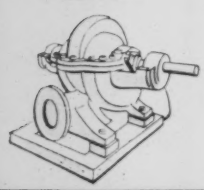
Q-1 As landmarks in water works leadership, Worthington built the:

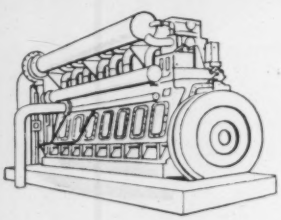
- ☐ First duplex pump for municipal use
- ☐ The largest water works installation in 1908
- ☐ World's most efficient pumps in 1927

Q-2 The trend in large water works pumps is:

- ☐ To horizontals
- ☐ To verticals
- ☐ There is no trend







Q-3 A Worthington Tri-Power Engine operates on the following fuels:

- ☐ Sewage gas and oil
- ☐ Natural gas and sewage gas
- ☐ Butane and oil

Q-4 Greatest accessibility for service is offered by:

- ☐ Vertical turbine pumps
- ☐ Horizontal double-suction split case pumps
- ☐ Propeller pumps

Q-5 You get maximum hydraulic head flexibility from Worthington:

- ☐ Vertical turbine pumps
- ☐ Horizontal double-suction volute pumps
- ☐ Mixflo centrifugal pumps

Q-6 Sewage from a city of 1,200,000 persons produces enough gas to generate:

- ☐ 400 hp.
- ☐ 1200 hp.
- ☐ 4400 hp.

Q-7 A sewage system is capable of generating how many cubic feet of gas per person per day?

- ☐ One-half cubic foot
- ☐ One cubic foot
- ☐ Two cubic feet

Q-8 Heat recovery from jacket water, lube oil, and recoverable exhaust heat can boost engine efficiency at full load as high as:

- ☐ 37.5%
- ☐ 58%
- ☐ 76%

Q-9 Worthington pumps can be used on:

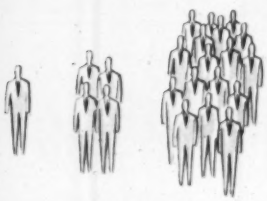
- ☐ Raw sewage
- ☐ Effluent
- ☐ Sludge

ANSWERS: (NO PEEKING)

A-1 Worthington was the first to build all three, as well as many other water works "firsts". **A-2** There is no trend. The particular application is most important. **A-3** Tri-Power engines are readily convertible to spark ignition and so handle any or all of the combinations mentioned. **A-4** Split-case horizontal pumps provide most accessibility. **A-5** Worthington vertical turbine pumps offer maximum head flexibility by varying the number of stages for different head requirements. **A-6** At 600 BTU per cubic foot, and 1,200,000 persons, Worthington engines can produce 4400 usable horsepower. **A-7** One cubic foot of gas per person per day is usually used for estimating purposes. **A-8** Proper utilization of heat from a Worthington engine can make it as high as 76% efficient, as compared with 37.5% without any heat recovery. **A-9** All 3. Worthington pumps handle every liquid handling problem in sewage work. **A-10** Several suppliers—no one does everything. But Worthington handles engines, compressors, comminutors, pumps and auxiliary equipment, so a major share of responsibility can be placed in one direction. **A-11** In 1934 Worthington placed the first engine running on sewage gas in service. **A-12** Use of multi-speed pumps

PLANNING QUIZ

Worthington public works specialists



Q-10 On complex water pollution control systems, it is best to work with:

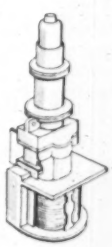
- ☐ One supplier
- ☐ Several suppliers
- ☐ Many suppliers

Q-11 Worthington produced this landmark in sewage plants—the first:

- ☐ Engine operating on sewage gas
- ☐ Agitated digesting tank
- ☐ Automatic, full-flow chlorinator

Q-12 An economical way to provide for additional pumping capacity is:

- ☐ Leave space for duplicate pumps
- ☐ Buy larger pumps initially
- ☐ Use multi-speed pumps

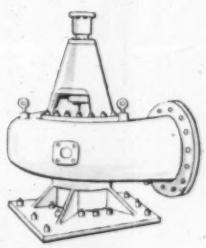


Q-13 A comminutor is most effective when installed:

- ☐ Upstream from a grit chamber
- ☐ Downstream from a primary settling tank
- ☐ At inlet to wet well of sewage lift station

Q-14 Pumps manufactured by Worthington are tested at test stand which:

- ☐ Is built over a man-made half-acre lake
- ☐ Is the world's largest
- ☐ Has capacity up to 100,000 GPM



Q-15 For Mixflo pumps, Worthington has the greatest:

- ☐ Selectivity
- ☐ Number of patterns
- ☐ Range of models

Q-16 Worthington makes which of the following?

- ☐ Clarifiers
- ☐ Filters
- ☐ Compressors

Q-17 A Worthington 36" comminutor handles:

- ☐ 0.2 to 3.0 mgd. peak
- ☐ 3.0 to 11 mgd. peak
- ☐ 2.0 to 26 mgd. peak

Q-18 Which reason justifies paying extra for variable speed pumping units?

- ☐ Pumping rates are always matched to flow
- ☐ Surges are avoided
- ☐ Wet wells can be smaller

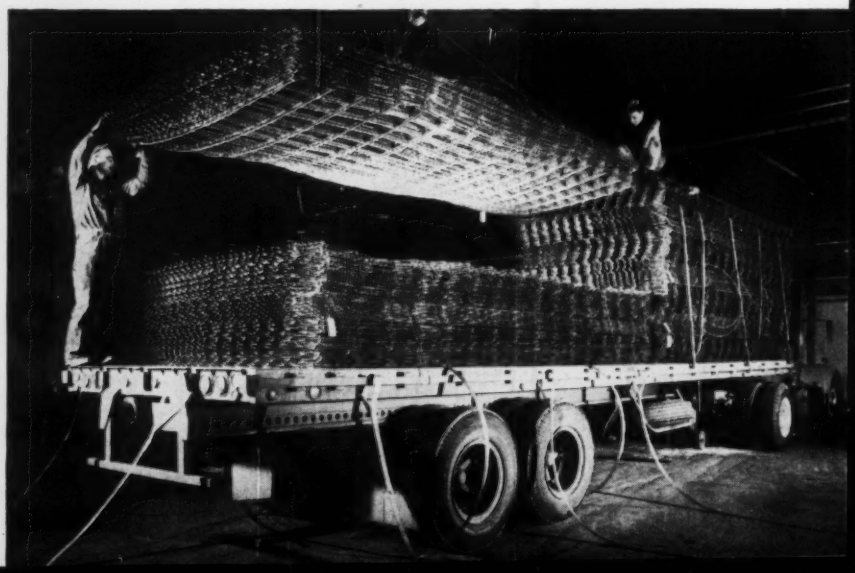
will cost slightly more initially, but can provide substantial increases in capacity at lowest long run cost. **A-13** At inlet to wet well of sewage lift station. For a treatment plant *downstream* from grit chamber and *upstream* from primary settling tank. **A-14** All three are right. Worthington's test stand built over a half-acre lake has a 100,000 GPM capacity and is world's largest. **A-15** Building Mixflo pumps since 1920, Worthington has accumulated the largest number of patterns and thus has the greatest selectivity with the largest number of models. **A-16** Worthington makes compressors—and matches vacuum pumps to the filters, but it does not make them or clarifiers. **A-17** The 36" comminutor handles up to 26 mgd peak. Smaller models handle as little as .02 mgd efficiently. **A-18** All three reasons justify extra cost of Worthington variable speed pump installations.

WORTHINGTON

New Hinged Road Fabric from Pittsburgh Steel folds in slightly more than half the fabric's full width. Here in Glens Falls, N.Y., where Torrington Construction Co. of Connecticut is building a 14-mile strip of the $275-million Northway, Job Superintendent Patrick J. DiNatale shows how new fabric folds along hinge running length of the sheet.

Pittsburgh Steel's New Hinged Road Fabric Big Success On New York State's Northway

Contractor Saves About One-Third Installation Time



Ready to go at Pittsburgh Steel's Monessen, Pa., plant is a flat-bed truck loaded with new Hinged Road Fabric. Ordinary road fabric requires special cradling equipment and extra handling. Not so with Pittsburgh Steel's new Hinged Road Fabric: it's shipped folded flat and in weights up to 40,000 pounds per truck (depending on size and style), twice that of ordinary fabric. Shipments to Glens Falls took only a day.

A revolutionary new road fabric from Pittsburgh Steel Company simplifies shipping, speeds handling and cuts installation time on roadbuilding jobs by as much as one third.

The new product, called Hinged Road Fabric, provides the steel backbone for a 14-mile strip of New York State's gigantic, $275-million Northway linking Albany with Canada.

Hinged Road Fabric features an off-center hinge running lengthwise on each section. Roadbuilders using this product—one of several being introduced by Pittsburgh Steel—cite its built-in benefits during:

• **Shipping**—Because Hinged Road Fabric's novel hinge permits folding in slightly more than half the fabric's full width, it can be stacked easily within the eight-foot width limit of a truck bed or gondola. This makes special cradle trucks and cradling equipment unnecessary.

As a result, trucks can be loaded to capacity (subject to state weight restrictions)—up to twice the weight possible with ordinary fabric.

• **Handling**—A single section of Pittsburgh Steel Hinged Road Fabric can be handled easily by two men instead of the four usually required for unwieldy ordinary sheets.

• **Installing**—Because the sheet is not bent during shipping and stacking, new Hinged Road Fabric lies flat when installed.

At Glens Falls, N.Y., where 800 tons of Hinged Road Fabric were installed on the four-lane, 175-mile Northway, Torrington Construction Co.'s veteran roadbuilders added their stamp of approval.

Patrick J. DiNatale, the Connecticut firm's job superintendent, was especially enthusiastic about the one-day service on Hinged Road Fabric truck shipments from Pittsburgh Steel's Monessen, Pa., plant.

"We get terrific service from Pittsburgh Steel," said Mr. DiNatale. "It takes just one day for a shipment to get here.

"Ordinary fabric usually takes a week to ten days to arrive because it's handled by truck, rail and then truck again. That's because many counties and cities won't permit trucks with overhanging loads to pass through.

"Pittsburgh Steel's fabric is handled only once—and in one day in loads up to 40,000 pounds, not 20,000."

Torrington's field engineer, Robert B. Cunningham, is enthusiastic about Hinged Road Fabric's fast, easy handling. He said:

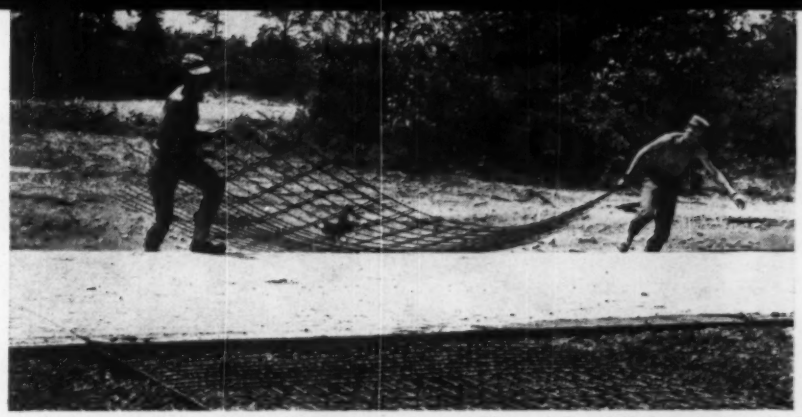
"I estimate that at the end of a working day this Pittsburgh Steel fabric saves us about one-third the installation time required with ordinary fabric."

The man directly in charge of the fabric's installation—Paving Foreman John Picciocca who has worked with all brands of road fabric for the last 12 years—had this to say:

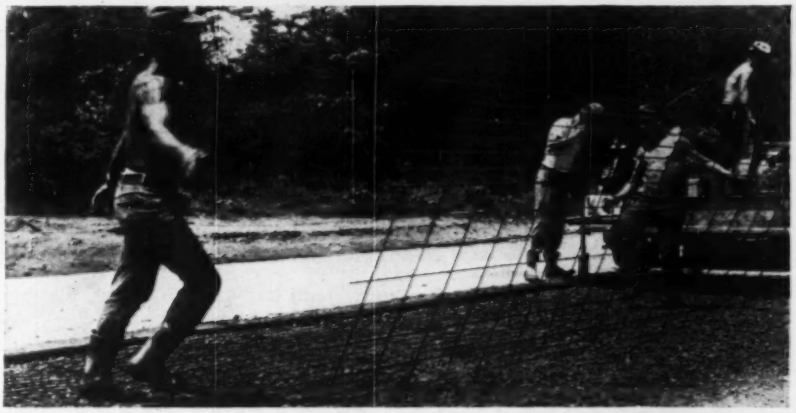
"What really sold me on Hinged Road Fabric is that it doesn't poke through the concrete while it's taking a set. That's a big problem with ordinary fabric. When that happens, you either have to cut the wire or repave the spot to cover the wire. That's murder on costs."

If you're in the roadbuilding business, you'll be dollars ahead—like Torrington—when you let Hinged Road Fabric provide fast, economical reinforcement on your next job.

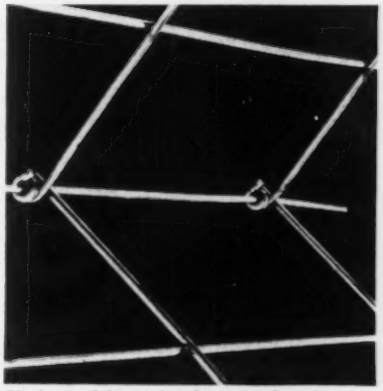
Contact your nearest Pittsburgh Steel Products sales office listed here.



On the job in Glens Falls, N.Y., a section of Hinged Road Fabric is handled easily and quickly by just two men.



Down goes Hinged Road Fabric in just seconds—and as flat as a living room rug.



Unique hinge is the result of two years' development work.

Hinged Road Fabric

Patents applied for

Pittsburgh Steel Products

a division of **Pittsburgh Steel Company**

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DISTRICT SALES OFFICES

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Chicago	Dayton	Houston	New York	Tulsa
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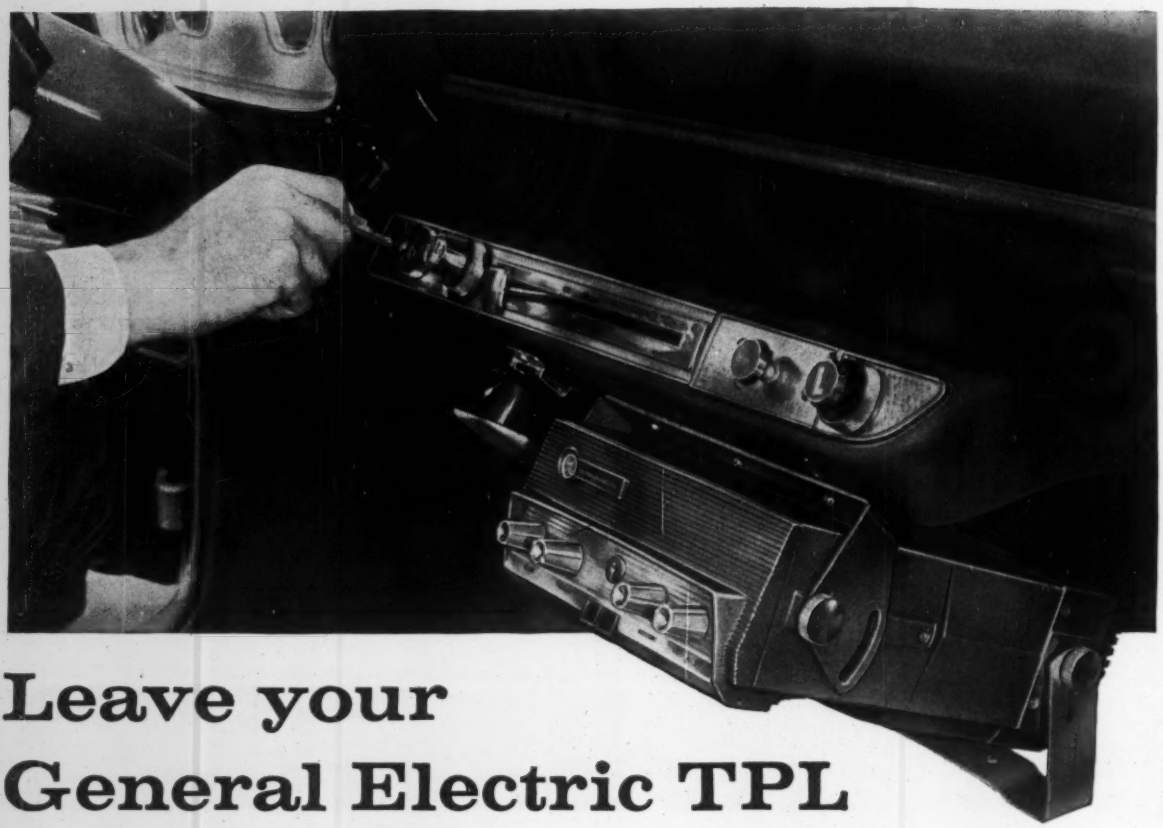

Leave your General Electric TPL 2-way radio on while your engine is off!

LOWEST BATTERY DRAIN AVAILABLE

Other makes of mobile radio drain your battery severely, even on standby. Unless you keep the engine running, this will inevitably shorten the life of your battery. And if you *do* run the engine while your vehicle is standing still, you're letting yourself in for a whole series of other problems—increased gas consumption, increased engine wear, special generators, etc.

Not so with TPL! Standby battery drain on General Electric's new Transistorized Progress Line is so low you need never turn off the TPL unit in your vehicle. By actual measurement, drain is less than 40 milliamperes, or only 1/25 of the current that runs your dome light. And even when the receiver is talking, drain is only 540 milliamperes.

With only four tubes in the TPL transmitter, you require no special generator, use less gas and need fewer engine jobs. The cost of operating your two-way radio system goes way, way down.

Get the full story on TPL—the smallest, most reliable two-way radio you can buy today. Write General Electric Company, Communication Products Department, Section 1090-29, Mountain View Road, Lynchburg, Virginia.

GENERAL ELECTRIC

ENGINEERING NEWS-RECORD

Vol. 165, No. 14 September 29, 1960

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THE CONSTRUCTION WEEK

PIPED ON DECK—First concrete for the lower deck of the George Washington Bridge was cast this week through a 2-ft-sq hole cut in the sidewalk of the upper deck. During the next five weeks some 5,000 sq yd of concrete will be piped from ready-mix trucks to hoppers, and from there to front end loaders, which will distribute the material shoreward from the middle of the bridge.

DISCOURAGING WORDS—A Federal Aviation Agency planning guide seeks to discourage construction of homes, hospitals, schools and churches near jet airports. FAA recommends that land near jetports be reserved for agriculture, industry and other things less disturbed by noise.

BEWARE THE UNCLASSIFIED—The City of Portland, Me., has won a $476,933 settlement from a bonding company and a Connecticut contractor who quit work on a municipal airport runway in a dispute over excavation of a ledge not disclosed by the plans. A special master found that bids had been requested on "unclassified excavation," giving "warning that the possibility of difficult excavation existed" and foreclosing a defense of deceit and misrepresentation.

EXIT THE METER READER—A leading water meter maker and a big telephone network are working out an idea that will take the meter reader off the water payroll and keep the telephone company's lines buzzing during slack hours. The system involves a tie between the customer's water meter and telephone. Without disturbing the customer, remotedly located automatic equipment would dial the meter for a reading, then process the information and issue a bill.

HIGHEST FILL—A 600-ft-high rock and earthfill dam—higher than any fill-type dam now in existence—would be built under a proposed $114-million water and power project near Melones, Calif., on the Stanislaus River. It would be a joint undertaking of the Corps of Engineers and Bureau of Reclamation.

BUCKING THE QUICK BUCK—Look for Congress to add some tough restrictions next year to a new law permitting organization of real estate investment trusts and giving them the same tax benefits as mutual funds. Some congressmen now think the law will bring a quick profit for a few without doing what was intended—stimulate new capital for construction.

YOU CAN FIGHT CITY HALL—Phoenix contractor Sam Mardian was elected mayor on a pledge to repair the city's chuckhole-ridden streets. One of the new council's first acts was to allocate $1,059,000 for resurfacing 150 miles of arterial streets. It's the biggest program of its kind the city ever had.

CEN-VI-RO

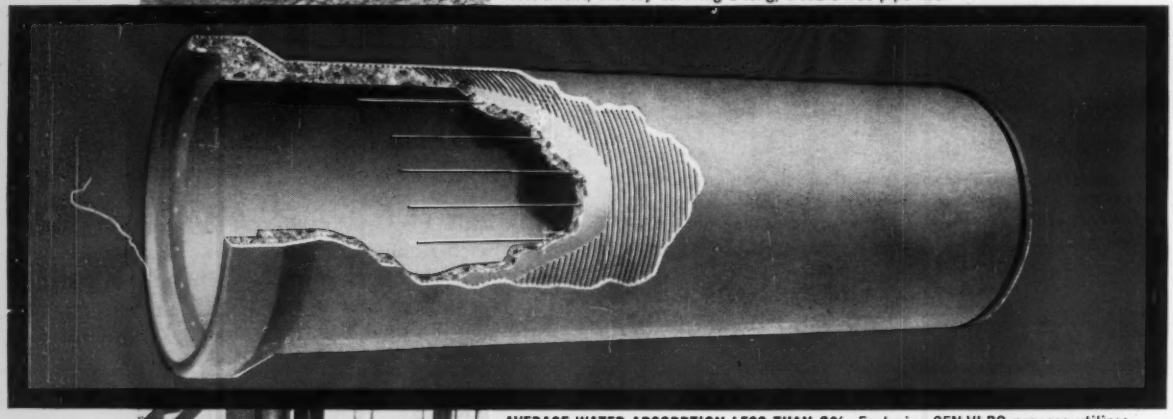
PRESTRESSED "NON-CYLINDER" CONCRETE PIPE... SELECTED FOR MAJOR WATER TRANSMISSION PROJECT!

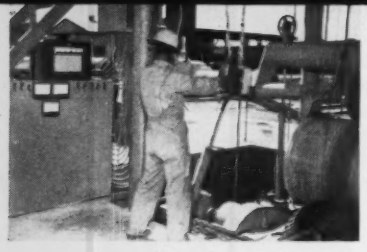
CEN-VI-RO prestressed "non-cylinder" concrete pressure pipe was selected from among many approved types for high pressure water transmission on the Teapot Dome Water District irrigation project in California's San Joaquin Valley. High pressure application on this job called for rigid specifications that were greatly exceeded in every way by CEN-VI-RO prestressed concrete pipe.

The patented CEN-VI-RO process, applied in the manufacture of prestressed "non-cylinder" concrete pipe, offers the ultimate in advanced design for modern high pressure water transmission.

MAXIMUM STRENGTH WITHOUT HEAVY STEEL CYLINDER. Centrifugally spun and vibrated CEN-VI-RO core provides a minimum compressive strength of 7000 p.s.i. Steel wire is circumferentially wound around the pipe core, under measured tension, prestressing the CEN-VI-RO core and eliminating need for a steel cylinder. Prestressing wire is terminated at ends and insulated to prevent metal-to-metal contact between pipe sections that might cause destructive corrosion, electrolysis or bi-metallic effect.

REDUCED LAYING TIME AND COST. Rubber "O" ring gasket and true cast bells and spigots eliminate the need for honing, caulking and mortaring joints, reducing laying time and cost to a minimum. Leak-proof flexible rubber gasket joints allow for expansion and settlement, thereby assuring a long, trouble-free pipe life.





AVERAGE WATER ABSORPTION LESS THAN 2%. Exclusive CEN-VI-RO process utilizes "earth-moist" concrete, providing a high density, uniform distribution of coarse aggregates with absolutely zero slump.

AVERAGE COMPRESSIVE STRENGTH OF 10,000 P.S.I. Exceeds all minimum requirements and greatly increases the safety factor. CEN-VI-RO prestressed concrete pipe has proven itself superior to other types of concrete pipe, when subjected to both internal pressures and external loads.

Consider the extra advantages of CEN-VI-RO prestressed concrete pipe on your next job application. Write today for complete information and brochure.

Location of regional licensee's plants furnished on request.

CEN-VI-RO PIPE CORPORATION

BOX 1416 [redacted] SHAFTER, CALIF.

WASHINGTON OBSERVER

- **The campaign and construction**
  Nixon would build more than Ike
  Kennedy would build more than Nixon
- **Set aside the "set-aside" program?**

● **The campaign issues affecting construction are beginning to sharpen.** Sen. John F. Kennedy, the Democratic candidate, and Vice President Nixon, the Republican, are promising the country more programs in the field of public works, including school construction.

Senator Kennedy is developing the long-standing Democratic line: New power dams, reclamation projects and pollution control projects will help develop economic growth and foster well-being. He attacks the Eisenhower Administration on every issue.

Vice President Nixon comes at the subject from a different angle: The Eisenhower Administration has prudently favored and promoted building programs; he will "build on" those.

The two approaches amount to much the same in the end, except that Senator Kennedy would do more and do it faster. If either can have his way with Congress in the next session—and that remains a big "if"—then the federal budget for public works will go higher than now, and federal assistance to the nation's school system will be instituted. The big "if" will be settled, to a degree, in the Congressional races that go along with the Nov. 8 Presidential election.

Vice President Nixon favors federal underwriting of school bonds—an Eisenhower proposal—but he favors grants for school room construction, too. He stops short, though, of the Democratic-Kennedy program for federal aid to increase teachers salaries. Mr. Nixon also favors federal aid for college dormitory construction, a program to which President Eisenhower objects.

Mr. Nixon promises more power project starts in the West, while defending the Eisenhower record. He points proudly to the Upper Colorado water storage project as a single, big monument to the Republicans.

Senator Kennedy promises even more. He is cheered by responses he is getting in Idaho, Wyoming, Washington and Oregon to his attack on Eisenhower policies.

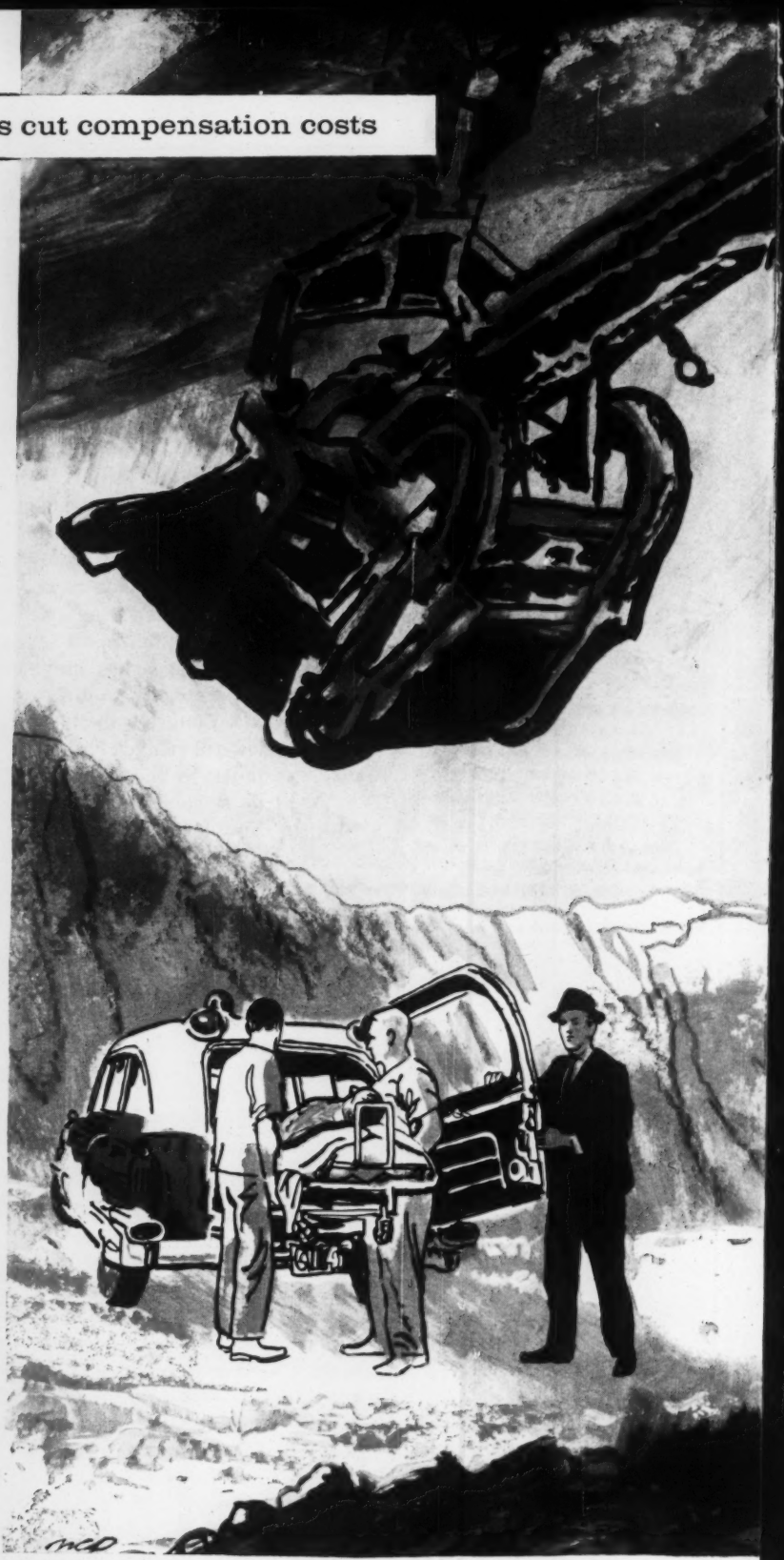
—

● **Don't expect too much from the new small business "set aside" for government construction projects.** The provision (that contracts under $500,000 should be made available to a small businessman) has created a bit of concern in Washington, and perhaps among businessmen.

But the reality is this: More than 90% of the general contractors—some 7,200 members of the Associated General Contractors—would be eligible for bidding. That means the Corps of Engineers, and the Navy's Bureau of Yards and Docks could comply with the Congressional fiat without interrupting present custom too much. The Navy put out regulations this week; the Army is following with its own.

The root of the matter: If a contracting officer sets up an exception to the set-aside rule, he won't be overturned unless the Small Business Administration, on a specific complaint, objects.

How **protection in depth** helps cut compensation costs



Minutes make a difference when a worker is badly hurt

Quick help for your accident victims can save more than a life or a limb. It can also save you compensation premiums. Working out of 106 offices coast to coast, Liberty claimsmen act fast to see that your worker receives proper care. If necessary, consulting medical specialists are rushed to his hospital bed. A rehabilitation nurse begins her liaison with patient, doctor and policyholder to speed recovery. Detailed claims investigations are made while the facts are fresh. This thorough, emergency action is but one of the many Liberty Mutual services that add up to protection in depth. To learn more about Liberty's protection in depth and how it can help lower your business insurance costs, just get in touch with the Liberty Mutual office nearest you.

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Ohio's Gov. DiSalle joins newsmen on . . .

tour of federal-aid highway projects.

How to Sell the Highway Program

Last week, more than 30 aspirants for Congressional seats from Ohio were flown to Akron in chartered planes for a day-long, nonpartisan briefing on that state's participation in the federal-aid highway program.

This week, the first of eleven question-and-answer sessions on the Interstate program took place in Pennsylvania—candidates for the state's general assembly and the federal Congress participating.

Whirlwind press tours have been held in other states—including Tennessee and Mississippi – to familiarize newsman and broadcasters with problems and progress of the highway program. And more are coming up.

It's all part of an intensified, nationwide effort to acquaint the public with the stepped-up Interstate highway program and its objectives.

At the national level, final organizational steps are being taken by the Better Highways Information Foundation, and that group's program is beginning to roll. An outgrowth of the Better Highways Information Committee of the American Road Builders Association, BHIF is an across-the-industry public service organization formed last February to publicize the need for and benefits of modern highways.

BHIF activities have sparked expanded public relations programs at the state level – both directly, by new BHIF state groups, and indirectly, through existing highway organizations.

During last week's Ohio trip (see pictures), Congressional candidates first viewed federal-aid urban projects in Akron. Then, traveling by bus to Mansfield, they toured several Interstate projects; a secondary road job; the Cleveland-Columbus Freeway.

They heard speakers—including Federal Highway Administrator Bertram D. Tallamy—during a two-hour session that was followed by a press conference. An organized news distribution set-up had television stations throughout the state carrying films of the meeting that evening.

The tour was a joint venture of three groups: Ohio Contractors Association, Ohio Citizens Highway Committee and Ohio Department of Highways.

The Pennsylvania Highway Information Association—patterned after the national BHIF—is one of the largest and most active in the country.

Organized last March after months of intensive preparation, it has a 350-man board of directors drawn from every segment of the highway industry, plus highway user groups.

Big effort to date was in July, with a state-wide "Pennsylvania Highway Information Week" and three fast-moving, ground-air press tours of existing highways and new construction in and around Pittsburgh, Philadelphia and Harrisburg.

W. Guy Gunn, executive secretary of PHIA (and director of public relations for the Associated Pennsylvania Constructors) says the new question-and-answer sessions will be the group's big push in its highways publicity campaign for the time being.

Chief topic discussed in these sessions will be a simple one: needs for and advantages of adequate highways for Pennsylvania.

All meetings will be held during the election campaign, with the last one scheduled for November 2. Each Department of Highways district engineer is scheduled to attend the meeting in his district, along with local and state association leaders.

(*Turn the page*)

E. S. PRESTON, Ohio Director of Highways, stresses importance of urban projects.

B. D. TALLAMY, Federal Highway Administrator, addresses the Ohio group.

GORDON H. SCHERER is key member of House Public Works Committee.

Tied in with two of the meetings will be air-ground press tours similar to those conducted in July.

A key unit in PHIA's organization is its public relations advisory committee, made up of eleven professional public relations people from industry groups.

PHIA operates under a yearly budget of $92,000, contributed by industry, user groups, and individuals.

State contractor associations in at least two southern states—Tennessee and Mississippi—have stepped up public relations efforts since BHIF was formed.

Last May, the Tennessee Road Builders Association—during "Tennessee Better Roads Week"—staged an 800-mile air press tour of construction projects on the Interstate system. Eight private twin-engine planes took reporters, photographers and radio and TV men on the one-day trip.

Fact kits were supplied to news men, and various experts were on hand to answer questions. "Excellent news coverage and many feature stories have resulted from the tours," says Leslie T. Hart, executive secretary of TRBA and a veteran newsman himself.

TRBA has carrried on an intensive public relations campaign since the expanded highway program came into being, says Mr. Hart, and these efforts will continue. The press tour may become an annual event to underline progress that is being made in improvement of Tennessee's highway system.

The Mississippi Road Builders Association—in cooperation with the state highway department—staged a press tour in June. The on-the-ground tour covered every area of the state.

Representatives of wire services, daily papers, radio and television who stayed with the week-long tour covered 1,250 miles and highway projects from county road improvements to new Interstate construction. Local news people joined the tour for one-day periods in each of six districts.

R. H. Harris, executive secretary of MRBA, says members of the group's Better Highways Information Committee plan to intensify PR efforts later this year and early in 1961, when Federal highway financing will be a major issue in Congress.

People are running with the public relations ball in the midwest, too. Ed Rainey of S. J. Groves Sons Co., Minneapolis heavy contractors, is pulling together industry representatives from ten midwestern states for an organizational meeting early in October in Des Moines. The meeting will be under BHIF sponsorship.

Formal support for the Better Highways Information Foundation comes from the members of four organizations—American Road Builders Association, Associated Equipment Distributors, Construction Industry Manufacturers Association, and Associated General Contractors of America. Its executive committee is headed by H. D. Anderson, former AED president.

Says Mr. Anderson, "Our sole purpose is to keep reminding the American people that the reasons which launched the national highway program in 1956 are still very sound and that the objectives of that program are still good."

Slogan of BHIF is "Better Highways Now: Save Lives, Save Time, Save Money."

Money target for a BHIF fund drive, being conducted at the state level, is $360,000. Thus far, 17 states have met their quotas, established in proportion to each state's share of federal aid for highways.

Early in September the BHIF executive committee stamped its approval on a $220,000 public information program recommended by its public relations advisory committee. The program will include development of radio and television materials, press features, editorial cartoons, motion pictures, literature, posters and speeches.

Expected momentarily is selection of a "man of stature" to serve as BHIF chairman. Also due is the selection of a public relations director, a field coordinator, and a public relations firm to aid development and placement of materials.

Two weeks ago BHIF got a boost when the executive committee of the American Association of State Highway Officials voted to support its general objectives and program.

Upgrade U.S. Pollution Control?

Federal water pollution control may be slated for a major upgrading after Congress convenes in January.

Reorganization of one kind or another has support both in the Administration and on Capitol Hill. But the harmony ends there. How far to go with changes is a matter of disagreement between Rep. John A. Blatnik (D., Minn.) and Health-Education-Welfare Secretary Arthur S. Flemming. And the question of whether engineers or doctors should have the final say in water pollution matters is stirring up old rivalries.

Secretary Flemming's plan, part of a general reorganization in the Public Health Service, is comparatively mild. It would place the existing divisions of water pollution control, air pollution control, radiation, and industrial hygiene under a new Bureau of Environmental Health, which would report to the Surgeon General of the PHS.

Representative Blatnik, on the other hand, would rip the Water Pollution Control Division clear out of the PHS and elevate it to the same agency status that PHS itself occupies now, reporting directly to the HEW secretary.

HEW officials say Congress is ready to approve the Administration's reorganization plan as soon as it reconvenes. In fact, the appropriate committees seemed willing to pass it this year, but the haste of the August post-convention session prevented action.

Representative Blatnik also claims broad congressional support for his proposal. And even if the Administration plan is approved, he will make a fight to remove water pollution control from PHS while letting the rest of the reorganization stand.

• **The Flemming plan**—The idea for an environmental health bureau grew out of the House Appropriations Committee's concern at the scattered administration of problems involving the individual and his environment.

The committee believes that the growing problems of pollution and radiation, divided as they are between engineering and medical entities within PHS's Bureau of State Service, are not getting enough coordinated attention. It would help, the Committee reasons, to put the engineers and the physicians concerned with these problems together in one office. Such action would facilitate a concerted attack on each problem, with available funds carefully allocated between research on biological effects, and research on measurement and control of pollution.

PHS agrees. It appointed a task force that came up with a plan for two new bureaus—Environmental Health and Community Health. The new bureaus would divide the present functions of the Bureau of State Services, which would then be abolished. Within the Environmental Health Bureau, the engineers and physicians concerned with pollution problems and effects would be more closely allied than at present. Community Health would take over such concerns as communicable diseases and hospital construction.

• **The Blatnik plan**—Representative Blatnik's bill would establish a Federal Water Pollution Control Administration, comparable to the Food and Drug Administration, with a commissioner in charge.

His feeling is shared by the Surgeon General's Water Pollution Advisory Board, a group of non-government experts. Board members have long been dissatisfied with division status for water pollution control. They think it should be at least a bureau.

Representative Blatnik believes water pollution control probably should be taken out of HEW altogether. "Water pollution today is not primarily a health problem," he says. "[It] is getting short shrift under the Public Health Service."

He may move to transfer the whole operation from HEW to the Interior Department if his first bill fails to pass. "It is a problem of conserving what water resources we have while we are searching for new ones," he declares.

• **Engineers vs doctors**—Under the Administration plan, environmental health would be headed by a doctor. Some engineers feel that this post should go to an engineer and they complain about being kept under the thumb of the medics.

Actually, however, engineers would have about the same authority as at present. The Bureau of State Services is headed by a doctor; the Water Pollution Control Division is headed by an engineer, Gordon McCallum; and the newly created Division of Air Pollution Control is headed by another engineer, Vernon G. McKenzie. Moreover, above the head of the doctor-chief of environmental health will be another engineer, Assistant Surgeon General Mark Hollis, long-time chief sanitary engineer of the PHS.

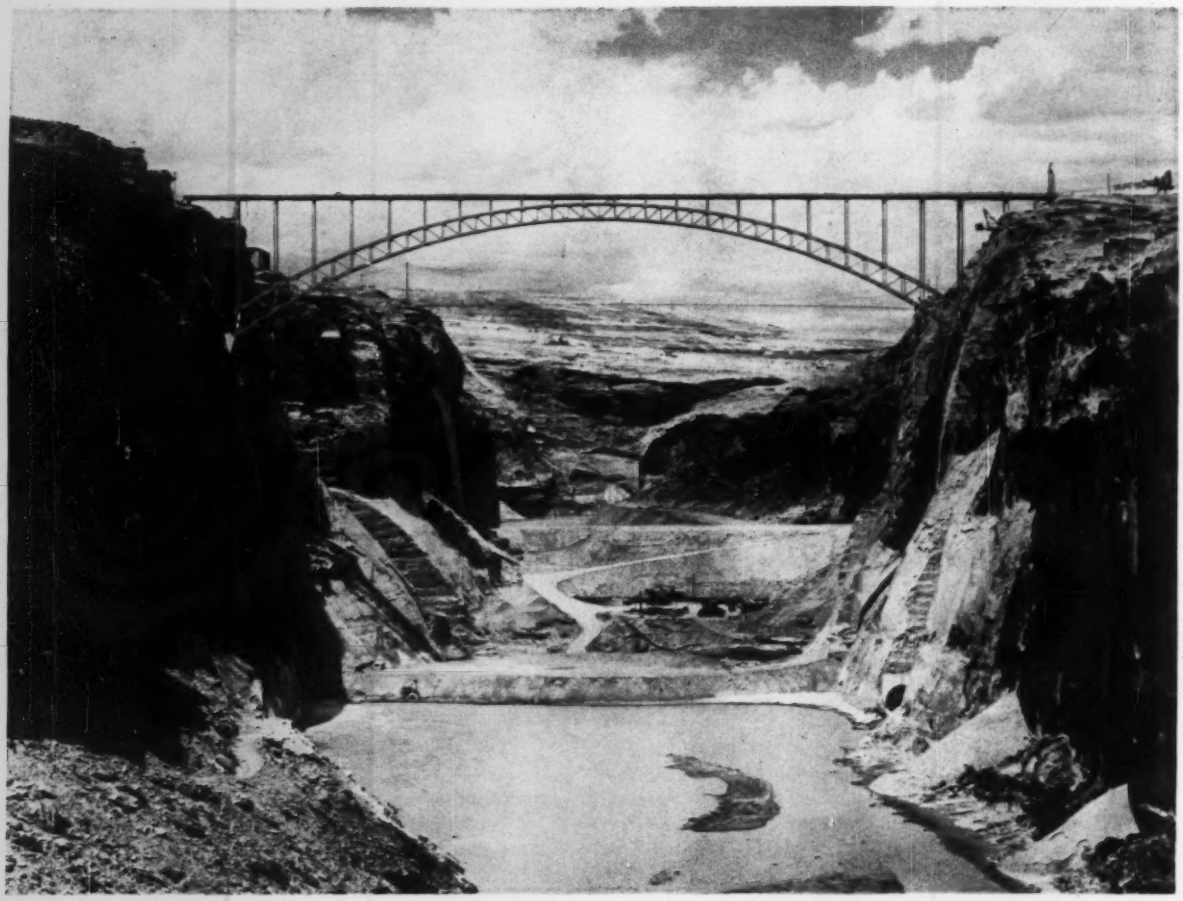
The balance between engineering and medical interests in the proposed reorganization is defended by Dr. John Porterfield, Assistant Surgeon General. Top management in the PHS, he insists, will always have both interests in mind.

REP. JOHN A. BLATNIK: He wants to take it out of the USPHS.

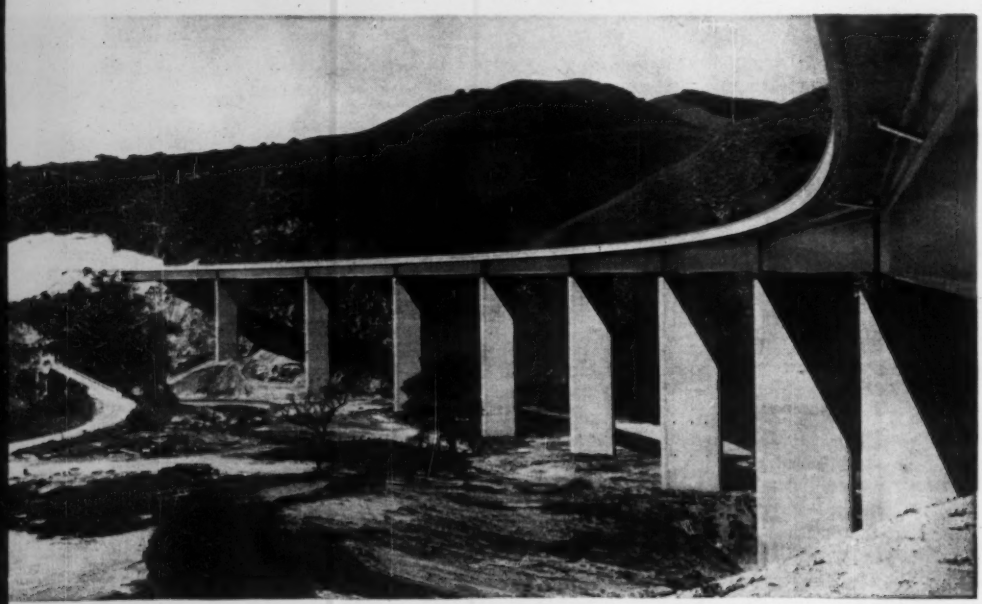
GORDON McCALLUM: His division would be kicked upstairs.

MARK HOLLIS: He would still exercise upper echelon control.

AISC Picks Beautiful Steel Bridges



GLEN CANYON BRIDGE, Page, Ariz., (Class I) designed by the Bureau of Reclamation, has "elegant, airy arch design."



HUASNA RIVER BRIDGE (Class II), by California Department of Public Works.

MODROW BRIDGE, Cowlitz,

# of 1959

Fifteen bridges in nine states were chosen this week as the most beautiful steel bridges open to traffic in 1959. Five are in California. They were selected from the largest number of entries ever received in the 32-year-old competition sponsored by the American Institute of Steel Construction.

Winners in each of three classes are pictured.

Honorable mention awards went to: Bridges with spans of 400 ft or more (Class I): American Rapids Bridge, Niagara Falls, N. Y., designed by Praeger-Kavanagh, New York, N. Y.; Mohawk River Bridge, Towns of Colonie and Half Moon, N. Y., by New York State Department of Public Works assisted by Frankland & Lienhart; and Fort Pitt Bridge, Pittsburgh, Pa., by Richardson, Gordon & Associates, Pittsburgh.

Bridges with fixed spans under 400 ft and costing more than $500,000 (Class II): College Avenue Bridge, Appleton, Wis., by Wisconsin State Highway Commission; P. R. Olgiati Bridge, Chattanooga, Tenn., by Aake F. Hedman & Associates, Chattanooga; Pennsylvania Boulevard Bridge, Philadelphia, Pa., by Gannet Fleming Corddry & Carpenter, Inc., Harrisburg, Pa.; Park Road Bridge, Washington, D. C., by D. C. Department of Highways and Traffic; and Robert R. Shoemaker Bridge, Long Beach, Calif., by Moffatt & Nichol, Long Beach.

Bridges with spans under 400 ft and costing under $500,000 (Class III): Truckee River Bridge, near Truckee, Calif., by California Department of Public Works; Pecos River Bridge, Ft. Sumner, N. M., by New Mexico State Highway Department; and Kern Avenue Pedestrian Overcrossing, McFarland, Calif., by California Department of Public Works.

Bridges with movable spans (Class IV): Grant Line Canal Bridge, between Stockton and Tracy, Calif., by California Department of Public Works.

Wash., (Class III), by Harry Powell & Assoc.

ICBM Work Cuts Red Tape

The Pentagon has taken fast action on suggestions from construction contractors and architect-engineers on ways of speeding up the lagging program of missile base construction (ENR Aug. 18, p. 21).

The Defense Department has set up on-site systems to eliminate multiple inspections of work, to offer prompt review of shop drawings, and to assure monthly payments to contractors for additional work resulting from change orders.

Last month the Pentagon consolidated contracting authority for the ICBM bases in a single organization, the Corps of Engineers Ballistic Missile Construction Office.

These improvements stood high on the list of suggestions offered by contractors and A-Es to Defense Secretary Thomas Gates after his July conference with them.

Secretary Gates summarized his action on these proposals in a report that went out this week to those who attended the conference.

On the basic issue of construction control, the Defense Department reports an Army-Air Force agreement that the contracting officer is the single authority to deal with contractors.

All field units have been notified that the contracting officer for missile bases is the commanding general of the Corps' BMCO, with headquarters in Los Angeles. At each ICBM construction site a BMCO area engineer represents the central office in all local dealings with contractors.

Design remains the complete responsibility of the Air Force, the document makes plain. On missile bases, the Air Force not only establishes design criteria, it also provides project plans and specifications to BMCO of the Corps of Engineers for construction of the ground installation.

Design functions are coordinated and modified so far as feasible to smooth on-site operations and make construction easier. The harassment of multiple inspections, for example, will be largely, if not entirely eliminated by the organization under the contracting officer of joint construction teams. This plan proposes that inspectors for the Air Force and its architect-engineer firm work with the Corps to make group inspections.

In order to speed review of shop drawings for parts and equipment that the construction contractor must build into the project, each site now has an assigned A-E representative who has the authority to check over and approve these plans.

Contractor suggestions that money might be saved by giving bidders more than 30 days to study a project got a turndown in the Defense summary. Additional pre-bid time would cut into the construction period available to meet a fixed operational date, the Pentagon says. Further, it notes, the Corps has been getting good competitive bids under current practice.

Another idea for saving time and money, avoidance of sites involving hard rock or heavy water conditions, has been partially carried out. A-Es now have slightly greater latitude in selecting missile locations, under design criteria relaxed by the Air Force. Nothing has changed yet in tolerance specifications or purity criteria for ICBM base construction. The Air Force keeps all these criteria under constant review to see how they can be relaxed.

Contractors will be relieved of the heavy cost of financing change orders under the two-part order that contracting officers have been instructed to use. Where a negotiated final price for the added work cannot be arrived at in reasonable time, the contractor will receive payment under the first part of the order, based on the minimum estimated cost of the change. The negotiated price later agreed upon takes effect under the second part. Meanwhile, the contractor is spared the heavy drawdown on working capital that formerly plagued base builders.

Over-all, the Defense Department agrees to contractor pleas for the single contract system, with no separation of general and mechanical contracts. It also welcomes ideas of contractors for faster or more economical methods of performing modifications and changes. But the report warned that tight controls are necessary on delicate missile jobs, and then added that the recent Air Force and Corps reorganization centralizing control over modifications and change orders in a single Los Angeles headquarters building ought to straighten out most of the difficulties in missile base construction.

Long Spans for Chicago Tower

Long spans, made economical through standardized framing and foundation savings, will provide column-free office space in the $15-million Continental Center office tower in Chicago's Loop.

Naess & Murphy, Chicago architects-engineers, designed 42-ft square bays for the 22-story structure and used the same 27 WF sections for beams and coverplated girders. The hundreds of identical floor beams can be fabricated economically. The use of basic 14WF 320 column sections and coverplating them as required in the lower floors provides a further saving of materials and standardization of fabrication.

A major economy gained through the long spans is the reduction in number of column foundations. The 42x42-ft bays require only 20 columns.

Cutting the bays in half would increase the columns to 66. Since the caisson foundations must extend 100 ft through the subsoil to bedrock, this 70% reduction in number of caissons to be drilled and concreted represents a great saving.

In plan, the building is a rectangle, 172x130 ft, with four bays of 42 ft in the long direction and three bays of similar span in the short direction. The central core, 42x84 ft in plan, will house elevators, corridors, storage space and utilities.

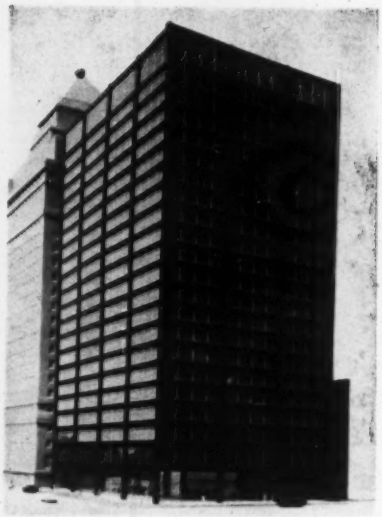
Still another saving is realized by limiting floor-to-floor heights to 11 ft 10 in. Mechanical duct work will pierce the floor beams and girders through reinforced openings, thus conserving ceiling space.

Floors consist of cellular steel deck spanning 8½ ft and topped with lightweight concrete.

The architects designed the column-free office space for flexible partition layout in modules of about 5 ft. Lighting and air conditioning will be provided for each 5-ft module by a combination light-and-air fixture, which will distribute hot and cold air through double ducts for maximum temperature control.

The exterior wall will present a stark rectilinear pattern displaying the structural frame in relief. Columns and spandrel beams will be sheathed in ⅜-in.-thick steel plate, welded and painted black. Glass curtain wall panels, divided by stainless steel mullions, will be set in from the face of the steel sheathing.

The general contractor, A. L. Jackson Co. of Chicago, is demolishing several existing buildings on the site. On completion in early 1962, the new building will double the present 600,000 sq ft of floor space in the adjoining Continental Companies' building. Together, the two buildings will constitute the third largest office building in the Loop. They will be joined with enclosed bridges from the second floor up.



FACING PLATE, painted black, will outline Continental Center's structural frame.

FAA Proposes Building Height Limits

The Federal Aviation Agency is considering new regulations that would extend the government's authority to limit the height of buildings, transmission towers, smokestacks and other tall structures.

Recent increases in air traffic require closer FAA control of construction to maintain air safety, said FAA. The Agency proposes to broaden standards requiring owners to notify FAA about proposed construction and to tighten criteria for judging hazardous construction. The Agency also plans to establish a public hearing procedure for those wishing to challenge FAA rulings. There is no such procedure now.

Under the new regulations, builders will have to notify the FAA at least 30 days before starting construction when proposed construction or alteration of any structure exceeds the following height limits:

- 150 ft.
- 1/100 of its distance from an airport boundary (e.g., a 76-ft high structure at a distance of 7,500 ft).
- 3/100 of its distance from a heliport boundary.

(Height in the last two conditions refers to the dimension above ground level or above airport level, whichever is greater.)

Other provisions that would require notification for structures of still lower heights if they extend above an "airport approach obstruction plane" are included in the regulations. Also included are criteria for determining notification requirements for air terminals, hangars and other buildings located on the airport property.

Notice is not required, however, for a structure exceeding the above limits when it is to be located in an area where adjacent structures or natural terrain would shield it.

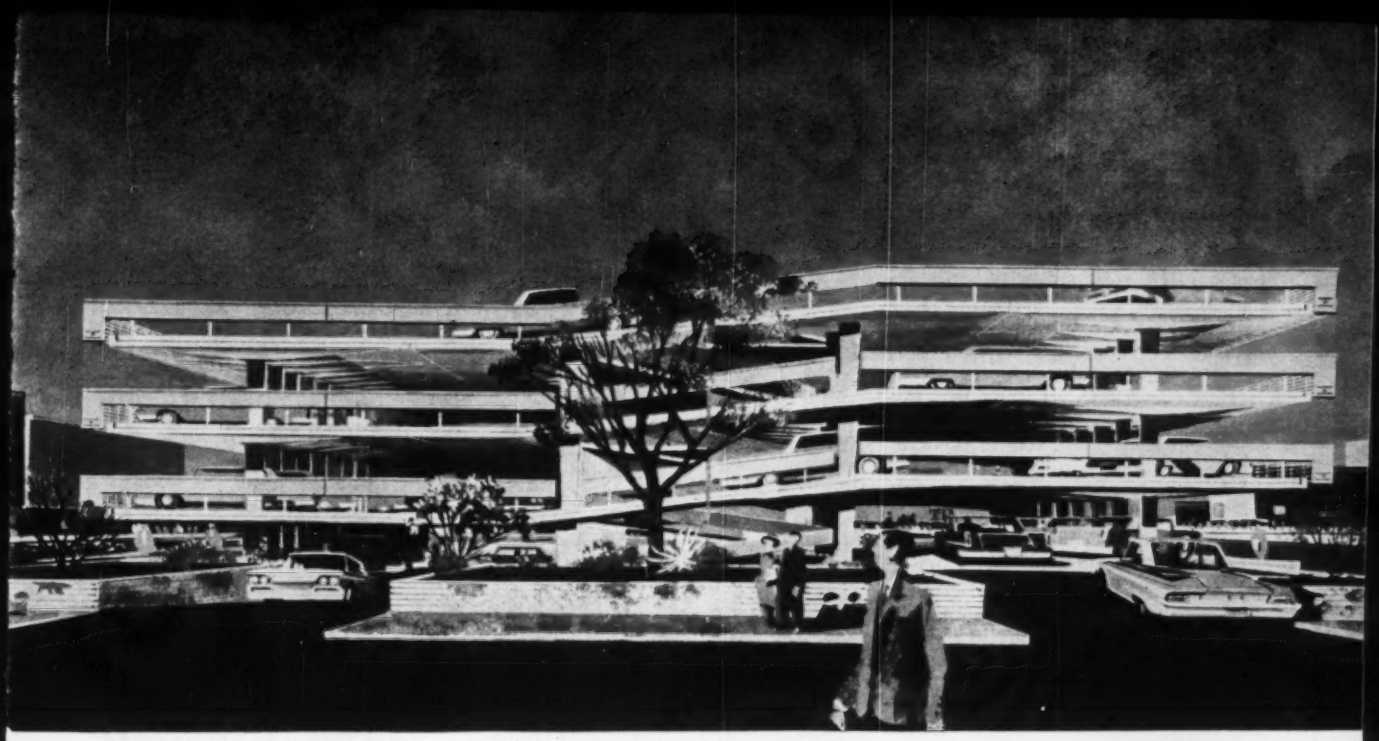
The proposed regulation also contains criteria for what constitutes "Hazards to Air Navigation," for use by the FAA. Structures over 500 ft high are classed as hazards. Within 5 miles of established air routes or within certain "control zones" outlined on aeronautical charts, structures over 170 ft high would also be considered hazardous.

Exceptions to the above rules would include transmission towers in special "antenna farm areas" proposed in the regulations. The antenna farms would have their own special height and area limitations.

An owner dissatisfied with an FAA ruling, or an airline representative objecting to an FAA-approved structure, may petition for a public hearing. This process is reserved for cases in which adjustment of building height or realignment of flight routes or altitudes has failed to produce general agreement. But the FAA chief is the final authority; he decides whether a public hearing shall be held.

At present, the only forum for considering air-traffic problems posed by tall structures is provided by the Air Coordinating Committee, and it is scheduled to expire on October 10. This committee generally limits its concern to TV and radio towers. It makes recommendations to the Federal Communications Commission on antenna locations and heights.

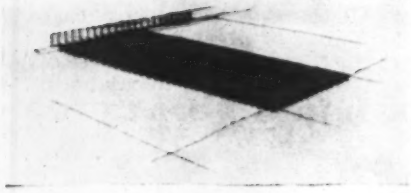
Interested persons should send their comments on the proposed regulation (Airspace Docket No. 60-WA-159), in triplicate, to the Docket Section, Federal Aviation Agency, Room B-316, 1711 New York Ave., N.W., Washington, D. C. Deadline: Oct. 30, 1960.



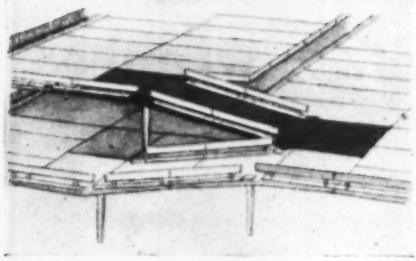
*TIERPARK, a development and product of the Tishman Research Corporation, was designed by Edgardo Contini, Engineer.

Multi-Story Prestressed Concrete Parking Structure

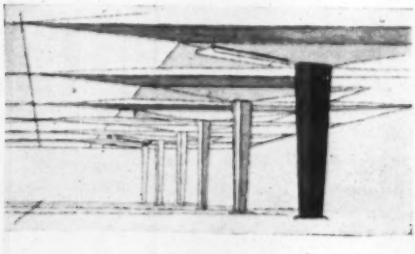
Designed for fast erection



SLAB



RAMP SLAB



COLUMN

*Trademark of the Tishman Research Corporation—Patent Pending

Self-parking structure requires only three standardized components, mass-produced by concrete fabricators

TIERPARK is a self-parking type of garage that can be erected quickly because it is made up of standardized prestressed concrete components which are mass-produced and stockpiled at a casting plant. The components are assembled on-site in single or multi-tier combinations by a simple sequence of bolting and grouting.

Components are cast by leading concrete fabricators

There are only three primary components of TIERPARK. The typical slab, ramp slabs and typical columns form the entire structural system. No beams or girders are required. And a specially designed rigid connection between columns and slabs does away with the necessity of bracing or shear walls to resist wind or seismic forces. Tishman has licensed over 80 of the country's leading prestressed concrete fabricators to manufacture TIERPARK components.

1200-car TIERPARK uses 120 miles of Bethlehem Strand

Now underway for the Hempstead, Long Island store of Abraham & Straus, a division of Federated Department Stores, Inc., is a TIERPARK with a capacity of 1200 cars. All prestressed concrete members were made by Prefabricated Concrete, Inc., Cedarhurst, Long Island. Tensioning elements consisted of over 120 miles of 7/16-in. stress-relieved strand, manufactured by Bethlehem. Fabricators like Bethlehem strand's easy-to-handle flexibility in the casting bed. And they know they can rely on its consistent, dependable quality from reel to reel.

For further details on this new project or information on induction heated stress-relieved strand, write to our Wire Rope Sales Department.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.
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Cleveland Water Ban Draws Suburbs In

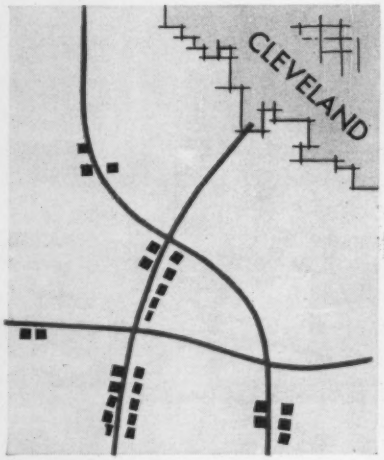
Thanks to a 1958 decision to stick with a ruling restricting water to sewered areas only, Cleveland is making headway toward freeing its water supply—Lake Erie—of pollution. And as a bonus, local governments in the area are getting a chance to catch up with demands on community services, overtaxed by far-ranging developers.

To a Clevelander, the fact that live fish were discovered near the Cuyahoga River outlet into the lake is proof of the wisdom of the city's policy. But the battle against polluting the lake with untreated sewage has had another effect equally important. It has slowed down the random "leap-frog" development that scattered far and wide over open, unsewered countryside before the ban.

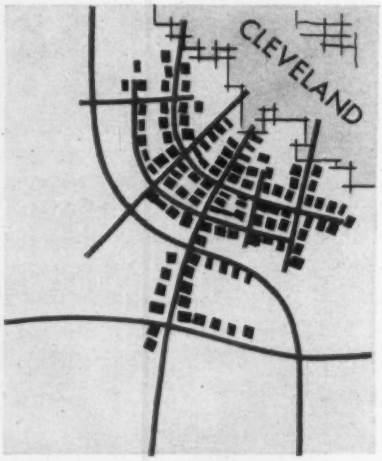
Here's the background: In October of 1956, utilities director Emil J. Crown (since retired) ruled that the city (the area's only water source) would not furnish water in any areas not provided with sanitary sewers and sewage treatment facilities.

Two years later, in October of 1958, after allowing time for hardship cases to work themselves out and time for developers to attain the proper financing to include the now-necessary package plants or community sewage plants in their plans for development of an area, the new utilities director, Bronis J. Klementowicz, really turned off the water valve. Approval was withdrawn for any projects that did not include these facilities unless work had started. And the ruling was strictly enforced.

This stand by the city, and the side effects, controlled hitherto unchecked development, and, says Mr. Klementowicz, eliminated line or strip development.



Less scattering of houses . . .



More compact communities.

Empty pockets within the metropolitan area were no longer neglected by the developers, and community-type developments instead of strip development became the rule. Many smaller developments and streets within the city proper—already served by water and sewer lines—sprang up.

The action also alerted suburban communities to the dangers of pollution, and since the ruling was strictly enforced, 11 communities within the metropolitan Cleveland area have either built or are in the process of building community sewage treatment plants. Five developers have put in package plants serving a total of 2,000 homes, and several more small systems are in the works. The plants will be turned over to the community for operation.

"The slowdown caused by the ruling gave many communities a chance to catch up with their new growth," says Director Klementowicz. A community's fire and police protection, schools and civic buildings got their share of attention during that time.

Many big developers, who now need an investment of $100,000-$125,000 for treatment facilities before a basement can be excavated, began building closer to the central package plant or community treatment plant, he adds, and thus created communities more easily served by all other utilities.

Cost to the builders is not really increased, Mr. Klementowicz points out. In this area, a good septic tank and field system runs around $2,000. Service sewer with lateral runs around $250. The $1,750-per-home saving offsets the cost of the treatment plant, he feels, not to mention the increased value and better selling appeal of the home.

New Bridge Opens Over St. Lawrence

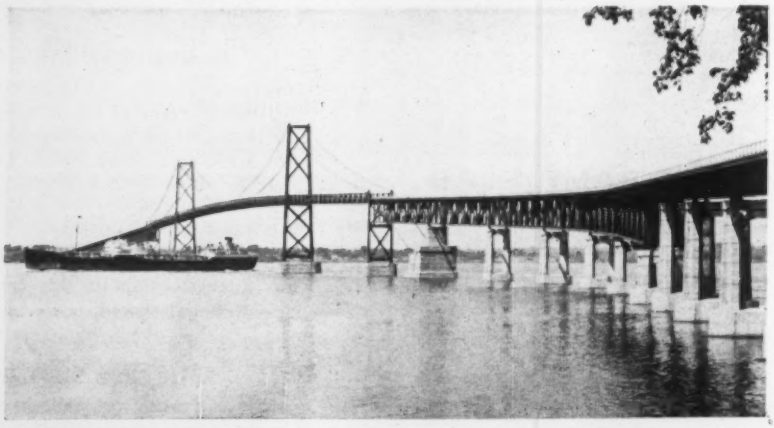
A $20-million suspension bridge dedicated last week provides another traffic link between the United States and Canada.

It spans the St. Lawrence River to connect Ogdensburg, N. Y., and Johnson City, Ont., some 60 miles south of Ottawa.

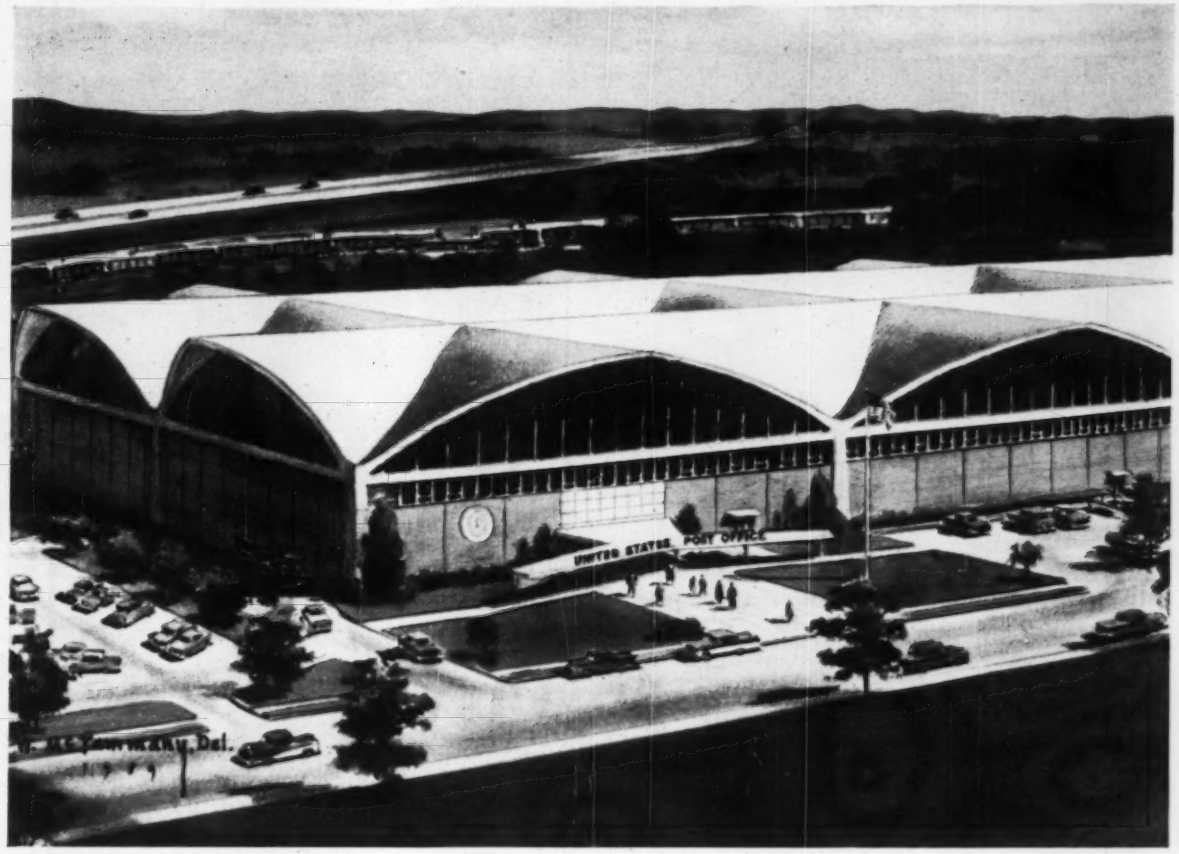
Owner of the structure, the Ogdensburg Bridge and Port Authority, has officially named it the Seaway Skyway Bridge.

The structure has an over-all length of 13,510 ft and its 2,150-ft center span clears the river by 124 ft.

Designed by Modjeski & Masters of Harrisburg, Pa., it was built for the Authority by the New York State Department of Public Works.



INTERNATIONAL CROSSING connects Ogdensburg, N. Y., to Ontario.



Architect's sketch of new post office, Providence, Rhode Island. Architect-Engineer: Charles A. Maguire & Associates, Providence, Rhode Island.

First mechanized post office . . .

concrete domed shells provide 420′ x 300′ area with just two interior column groupings

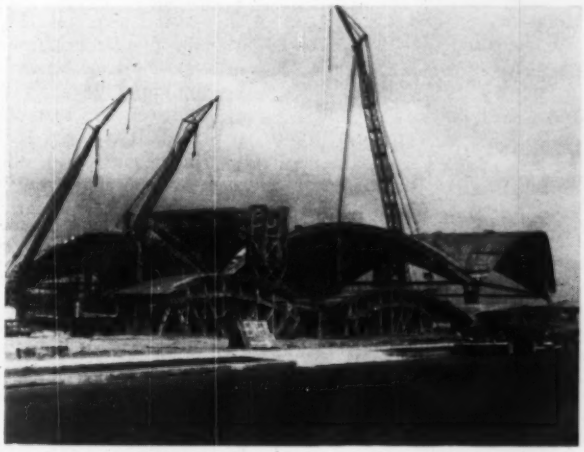
A mechanized post office at Providence, R. I., is first step in a postal modernization program that will eventually provide "next-day" delivery anywhere in the U.S.

Six intersecting concrete shells form the multiple domed roof. Two four-column groups provide the only interior support. This permits unobstructed floor space essential to the electronically controlled mail-flow layout and allows the flexibility required for experimental spotting and rearrangement of machines. Another benefit of a shell roof was to eliminate exterior buttresses of conventional arch construction which would interfere with outside truck traffic.

A concrete weighing 110 lb. per cu. ft. with a 2-inch slump and seven-day strength of 4,000 psi was used. Aggregate consisted of sand in combination with expanded shale. An air-entraining agent was added.

For design data on barrel shells and on standard, skewed, groined and sloping hyperbolic paraboloids, write for free literature. (U.S. and Canada only.)

PORTLAND CEMENT ASSOCIATION
Dept. 9e-17, 33 W. Grand Avenue, Chicago 10, Ill.
A national organization to improve and extend the uses of concrete



Falsework consisted of two identical sets of timber truss framing. 6″-thick shells each required 800 cu. yds. of concrete, placed in two operations. Spanning 150 x 140 ft., shells are separated by 2-in. expansion joints.

FOR STRUCTURES... MODERN **concrete**

Northwood Acres, small Pittsburgh development . . .

converts nearby marsh . . .

Sewage Lagoon Proves Out for a

By A. D. Sidio, Richard T. Hartman and Paul Fugazzotto

Stabilization lagoons can do an acceptable job of treating sewage even in moist climates, judging from the performance of an installation rounding out two years of operation in a Pittsburgh suburb.

Built in 1958 and 1959 for a small housing development in Hampton Township, Allegheny County, the two-cell pond presently serves some 300 persons. With a load level of 175 persons per acre of surface area, the lagoon treatment has produced the following results:

- At least 87% reduction of biochemical oxygen demand (BOD).
- More than 99% reduction of coliform organisms.
- Odor-free operation.

In addition, preliminary studies indicate complete removal of the salmonella disease-causing organism.

Following a review of the lagoon's operation for about a year, the Pennsylvania Sanitary Water Board has established standards for the construction and use of waste stabilization bonds.

Mr. Sidio is environmental health administrator and public health engineer for the Allegheny County Health Department's Northwest District. Assistant Professor Hartman teaches botany at the University of Pittsburgh. Mr. Fugazzotto, formerly chief of laboratory for the Allegheny County Health Department, now is director of Cattaraugus County (N. Y.) laboratories.

- **Why a lagoon**—The Allegheny County Health Department became interested three years ago in trying out the lagoon method. A newly organized agency, it recognized that one of its foremost problems was sewage disposal in rapidly growing outlying areas. Impressed with the proven performance of stabilization ponds under various climatic conditions in the western U.S., the department was on the lookout for a site.

The Hampton Township location appeared favorable. The site selected for the pond was part of a proposed 143-house development but useless for buildings. It was a swamp area nestled between the foot of a cliff and a railroad. It was 125 ft below the development area and about 400 ft away (horizontally) from the nearest house in the development. The nearest house outside the development area was 3,000 ft away. Only 150 ft from the lagoon, across the railroad tracks, was a receiving stream, Pine Creek, an Allegheny River tributary.

Since the houses were to be constructed over a period of several years, there would be ample opportunity to study the efficiency of the pond under conditions of increasing load.

County Health officials had agreed to have experimental studies conducted on the operation, and the National Home Builders Association, through the Metropolitan Home Builders Association of Pittsburgh, provided a grant to help pay for the research.

- **Parallel or series cells**—The pond was designed with two cells, each with about 0.88 acres of surface area. The cells were joined so they could be operated either in parallel or in series. Each cell was provided with a discharge control device to permit maintaining the depth at any level between 2.5 and 4.5 ft and also to permit drawing off effluent at any depth down to 2 ft below the surface.

Influent lines, supported on piers, were designed to discharge at the center of the cells. A division box was provided to distribute the raw sewage to either or both cells.

- **One-cell operation first**—The Pennsylvania Sanitary Water Board issued a permit for the lagoon in August, 1958, and the first cell began receiving wastes from 26 homes in mid-October. A plan to pump stream water into the cell to dilute the initial sewage flows was found unnecessary. Two weeks after the first inflow of wastes, an excellent algae growth had developed.

By the end of November, the entire cell froze over, except for an area that was immediately around the influent line. Later, the ice cover reached a thickness of 11½ in. Ice remained until the middle of February. During the critical thawing period no nuisance developed.

No effluent was discharged from the lagoon during that winter; in fact, the first discharge occurred in October, 1959, three months after the second

into stabilization lagoon for economical and efficient treatment of sewage.

Small Development

cell had been placed in operation in series with the first.

• **Mechanical odor detector**—Because of the possibility that a real or imaginary obnoxious odor might develop, a mechanical hydrogen sulfide detector was installed at the site. It was put in operation for several hundred hours in 1957 to determine baseline concentrations of the gas before construction began. Out of 215 two-hour samples collected in the preliminary operation, 67% showed less than one part per billion (ppb) of the gas and the highest reading showed between 7 and 8 ppb. Conditions have remained almost as good with the pond in operation. Of some 5,600 two-hour samples collected during more than a year of operation, 57% have shown less than 1 ppb of the gas, and the level has remained well below the odor threshold of about 100 ppb.

Other studies have included biological tests to determine the type and quantity of oxygen-producing algae present; chemical analysis, including BOD measurements, to determine the degree of stabilization acocmplished by each cell, the dissolved oxygen concentration in each cell and the hydrogen-ion concentration; and bacteriological tests, to determine the reduction of intestinal organisms.

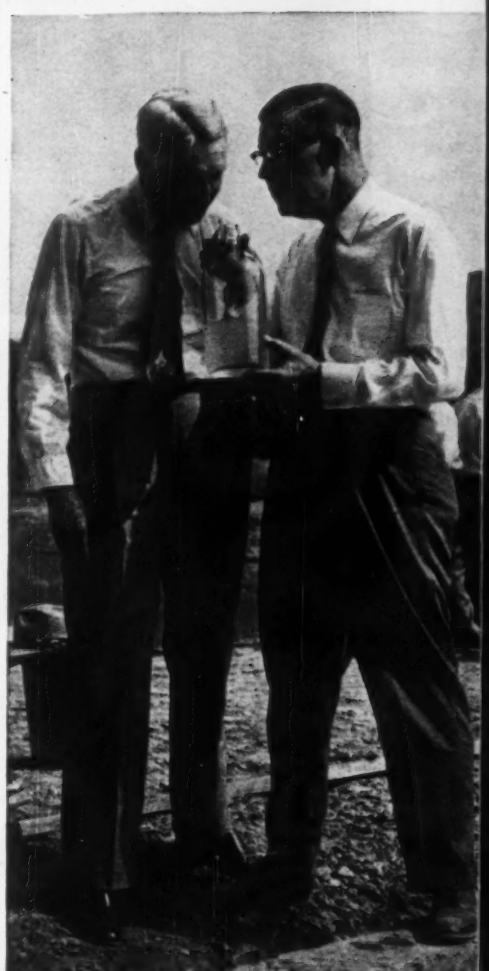
• **Algae under the ice**—During the first winter, when only the first cell was being used, chlamydomonas algae were present in high concentrations even under the ice. At no time during the first year did the pond become anaerobic. With continued low temperatures but with little snow, sufficient light for photosynthesis penetrated the heavy ice cover. In contrast, heavy snow cover lay on the ice for nearly two months during the second year, and the first cell became anaerobic during the latter part of December.

The algal population in the lagoon was fairly constant in number and not greatly varied in type. The relatively constant inflow of nutrients can be credited with keeping the population constant. The lack of variety of species contrasts with published observations regarding some other waste stabilization ponds. Our algal community was dominated by the chlamydomonas.

• **Performance has been good**—BOD reductions have remained consistenly above the 85% minimum required by Pennsylvania for discharge into secondary streams. The poorest reduction—86.6%—occurred last February.

The first cell has been loaded at the rate of 350 persons per acre since last November. With the cells in series, this is a loading of 175 persons per acre, double the design loading. But it gave the state and county an opportunity to measure efficiencies at the high loading.

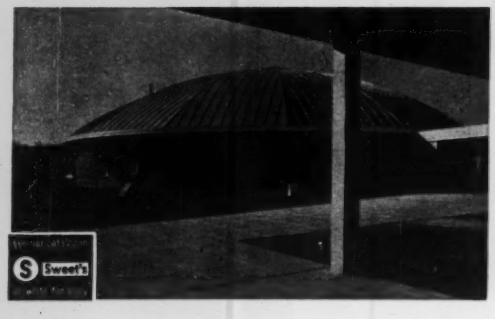
The state and county health departments ran a 72-hour continuous sampling program last February, when

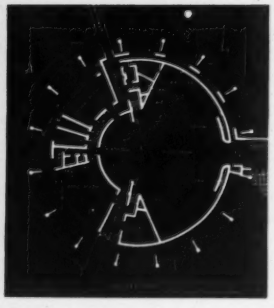


NO APPRECIABLE ODOR was verdict of M. K. McKay, Pa. sanitary board, and C. L. Wilbar, health secretary.

Hannah Penn Junior High School, York, Pennsylvania. Architects: Buchart Associates, York, Pa. Contractors: Reindollar & Son, York, Pa.

Space provided: auditorium seating 850 people; band room; choral room; four practice rooms; instrument storage; uniform storage; lobby with ticket booth; corridors; general storage. *Structural framing:* glulam buttressed arches of 167′ span spaced radially at 22½°. *Exterior walls:* brick. *Interior walls:* concrete block, brick, wood and acoustical paneling. *Floors:* concrete with asphalt tile in aisles and individual rooms. *Roof:* aluminum batten surface over heavy timber decking. *Heating and ventilating:* gas-fired unit ventilators with exhausts on the roof. *Lighting:* bullet-type down lighting in main auditorium; fluorescent fixtures in lobby, classrooms and corridors. *Volume:* 197,963 cubic feet. *Area:* 15,837 square feet. *Cost:* $15.82 a square foot.





Heavy timber decking and glulam arches and purlins by Timber Structures, Inc. remain exposed in this auditorium in the round, providing economical structural framing. Unaffected natural beauty is a welcome plus value.

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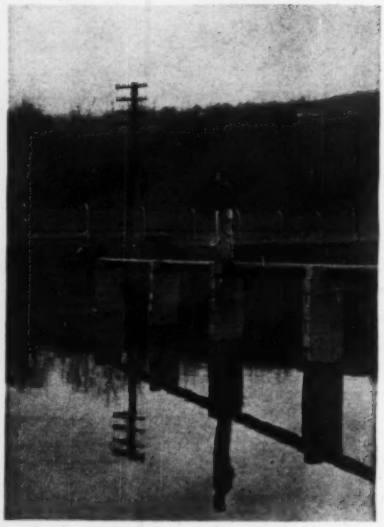


INFLUENT PIPE runs on piers to center of each lagoon cell.

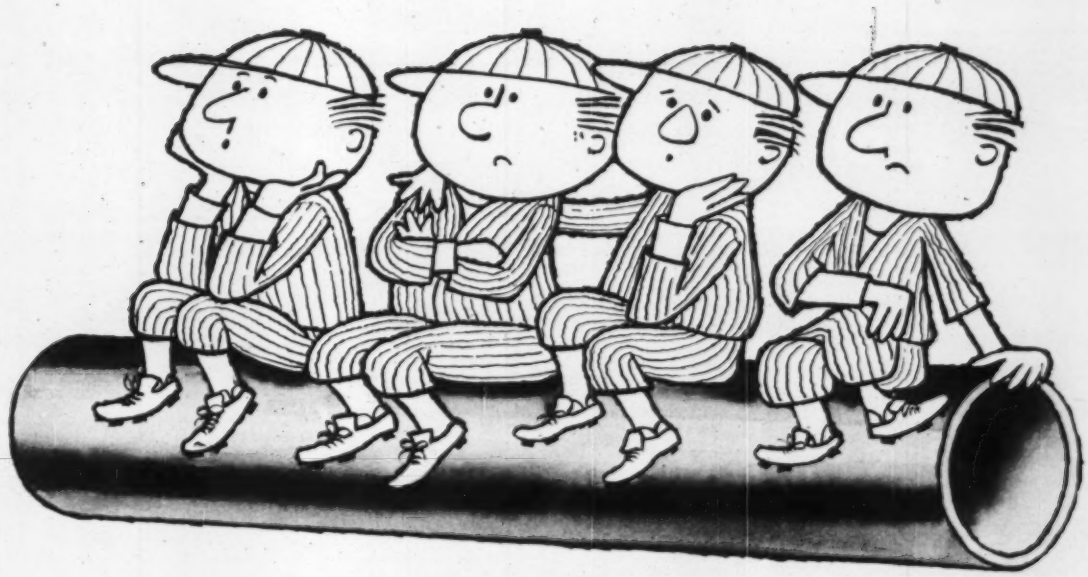
both cells were covered by 2 in. of ice and the air temperature ranged from 10F to 32F. BOD reduction through the combined cells was found to be 89%. During the sampling period the first cell continued to operate anaerobically (under conditions developed in December, previously mentioned). It alone reduced BOD 73%. BOD reduction throughout the month averaged 87% for the combined cells.

Flow during the sampling period amounted to 39 gpd per capita, or 12,190 gpd. At this rate, the 1.16-million-gal storage available between the 2.5-ft and 4.5-ft minimum and maximum operating depth would store the flow for 90 to 100 days. With this capacity, it is quite conceivable that the lagoon could maintain adequate efficiency at even higher loadings.

Although coliform reduction through the two cells has continuously exceeded 99%, the discharge still contains appreciable numbers of the organisms, and it seemed logical to suspect that it would also contain some intestinal disease-causing organisms if any were emptied into the lagoon. Studies have raised hopes that this might not be true.

Laboratory tests on salmonella to find out how long they could survive in influent and effluent samples have shown that these enteric pathogens rapidly decrease in number. The maximum survival time in either fluid was 12 days. Coliforms, on the other hand, showed very little reduction in numbers in this time.

The lagoon wes designed by North Hills Engineering Co., consultants to Nelson Beggs, the developer, under the guidance of Allegheny County Health Department personnel. The Beggs firm paid construction costs.



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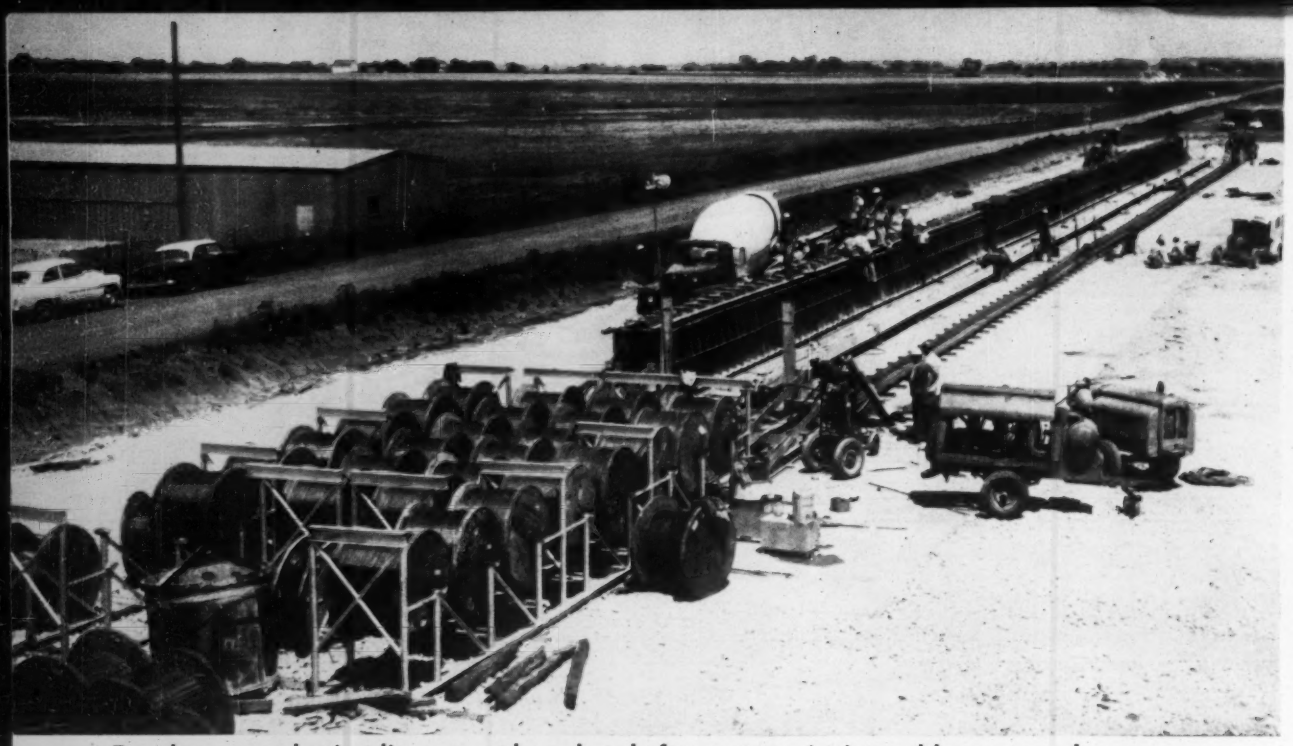


Two beam production lines, trough and reels for post-tensioning cables are used . . .

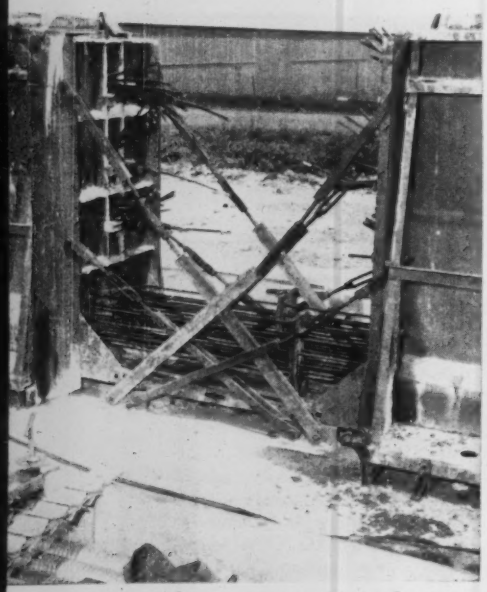
Bridge Beams Are Pretensioned

The contractor for a major bridge across the Platte River near Ashland, Neb., is using an unusual combination of pretensioning and post-tensioning for prestressed concrete beams. An ingenious yard layout produces 109-ft 9-in., 56-ton beams on an assembly line basis.

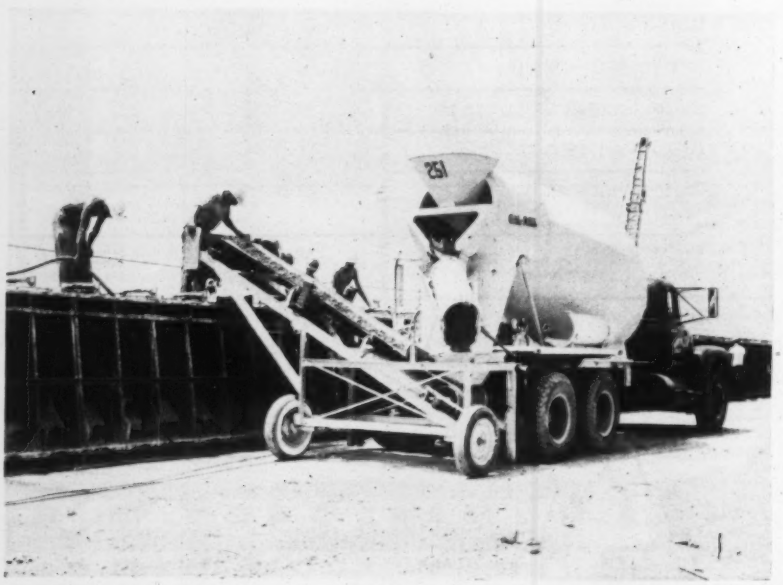
Twenty-four ½-in. strands and three Freyssinet cables—each made up of twelve ½-in. strands—stress each beam. The 24 individual strands are pretensioned and the three cables are post-tensioned.

Prime contractor for the $1.5-million twin bridge on Interstate 80 is Massman Construction Co. of Kansas City. The 1,542-ft twin trestle-type structure was designed for H20-S16 loading by the Nebraska Department of Roads. Each of the twin bridges carries a 30-ft-wide, two-lane roadway. The roadways are spaced about 88 ft c-c, which gives about 55 ft clear space between the two bridges. Each bridge has 14 spans of 110 ft, 28 bays in all.

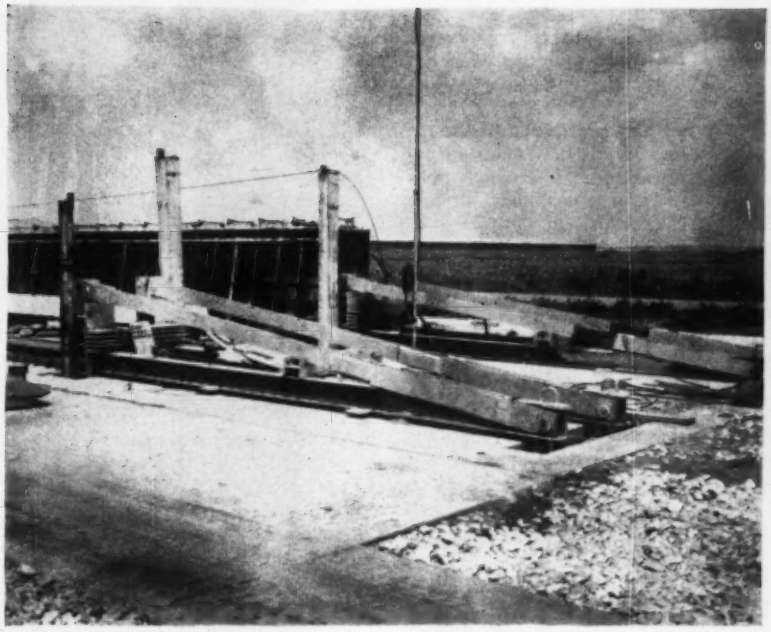
Each pier is supported by a cluster of 28 octagonal prestressed concrete piles, each 75 ft x 14-in. Each abutment rests on ten 65-ft and twelve 95-ft prestressed piles.



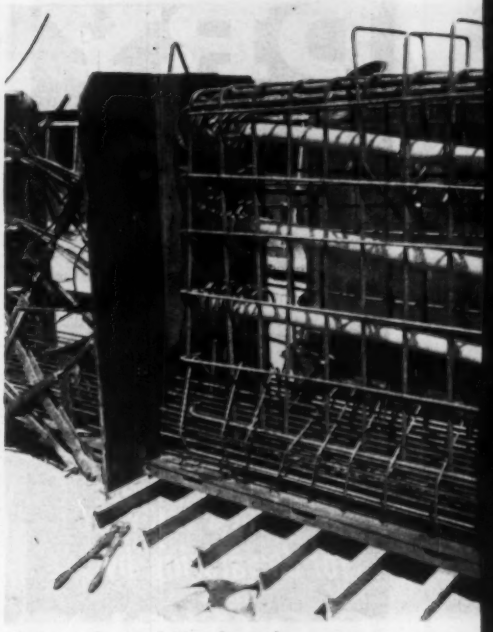
Strands are pretensioned . . .



Ready-mix concrete is placed in forms by conveyor . . .



Movable abutments are set up at beam ends . . .



Maze of steel is placed . . .

—and Post-Tensioned

Each span has six prestressed beams, a total of 168. In cross-section they are the standard AASHO Type IV beam, with depth of the top flange increased by 7 in. for an over-all depth of 5 ft 1 in.

Designers believe the combination of pretensioning and post-tensioning makes full use of available concrete strengths and is more economical than alternate approaches.

To produce the beams in quantity, Nebraska Prestressed Concrete Co. built a new casting bed at their Lincoln yard. The bed is 350 ft long, 38 ft wide, and has movable steel abutments at each end. The beams are cast in collapsible metal forms. The bed is long enough to permit casting of three beams in a line simultaneously and wide enough for two parallel rows of beams. Along the centerline of the bed is a trough for manufacturing the post-tensioning cables.

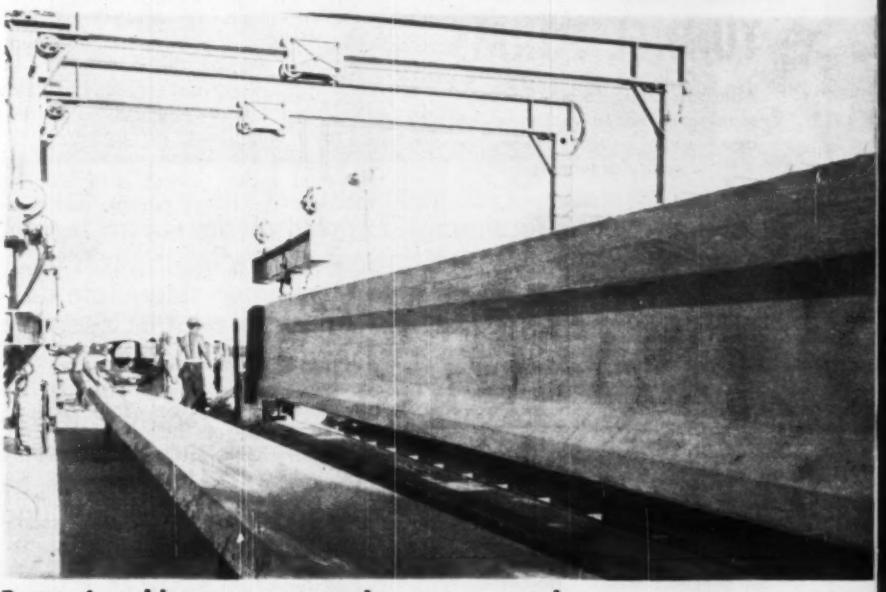
The producer handles casting and stressing of three beams at a time this way:

Workmen set the movable abutments. The twenty-four ½-in. tendons are placed in the lower flange of the beam between the abutments and stressed. Next step is assembly of the post-tensioning cables.

The post-tensioning method was worked out by the Freyssinet Co. of New York and Paris. Reason for using strand instead of stress-relieved wire: The maximum wire size used in post-tensioning so far is 0.276 in. dia. Seven wires, each 0.196 in. in dia, make up one of the ½-in. pretensioning strands. Twelve such strands make up each post-tensioning cable, which is encased in a 2⅜-in.-dia flexible metal hose. Each cable is capable of applying a design force of about 300,000 lb.

Twelve reels of ½-in. strand are set up on a rack at the end of the casting bed. A concrete trough 330 ft long is located on the casting bed between the two lines of beam forms.

Cable ends from the 12 reels are passed through a series of rollers and a spacing plate to the near end of the concrete trough. The trough contains 15 flexible metal tubes, each 330 ft long but cut at the third points. Work-



Pretensioned beams are moved to storage yard.

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men pass a wire through each tube to the far end of the bed (end away from the cable reels). At the far end, they hook the wire to the tag line of a power winch. They then pull the wire and the end of the tag line back through the tube.

A Kelums grip is attached to the tag line and the twelve ½-in. strands are inserted into the grip. The winch pulls the tag line, grip and strands through the tube. Workmen cut the strands at the third points.

Straddle carriers lift the cables and drape them in the beam forms. At each end, the 12 cables pass through a tapered hole in a machined steel anchor. A connecting sleeve is attached to the anchor and to the tube. Mild steel reinforcing cages, fabricated elsewhere on the site, are positioned and the steel forms assembled. Three beams are readied at the same time.

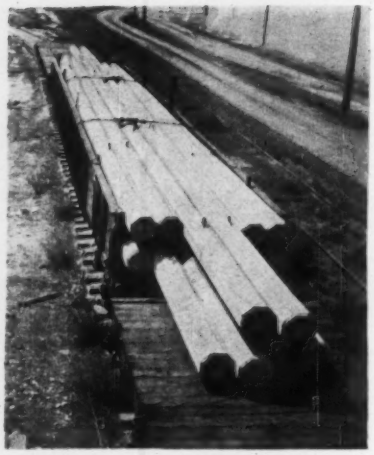
The producer then casts the beams. Eighty-five cu yd of truck-mixed concrete are required for three beams. A conveyor transfers the concrete from the truck-mixer to the forms. After the concrete is placed, workmen install covers over the beams and apply steam to cure the concrete. The producer uses rigid fiberglass covers made to his specifications by a boat manufacturer.

Steam curing period is 16 hours to a specified compressive strength of 4,000 psi. Following approval by state inspectors, workmen burn through the pretensioning cables at the end of each beam. Forms are then stripped and two 30-ton straddle carriers lift and carry each beam to a storage yard.

Carriers traveling to the storage yard move on 4-ft wide concrete runways laid in a pattern similar to that used in a railroad switching yard. Beams cure in the open air for 28 days to a specified compressive strength of 5,000 psi. Workmen using portable equipment post tension the three cables in each beam. In stressing each cable the 12 strands are attached to a double-acting hydraulic jack. A tapered metal plug holds the strands by friction in the steel anchor. Grout is forced into the tube under high pressure and completely fills the tube to make a rustproof cable. When grouted, the beams are ready for transportation by flat car to the job site.

Each 14-in. octagonal pile—tapered at one end over a distance of 28 ft to 10 in.—is pretensioned by eight ⅜-in. tendons. Because of their length and slenderness, each has four pick-up points instead of the customary two. Test piles were driven to satisfactory bearing by a diesel hammer.

Beams and piles are moved about 35 miles to the bridge site by rail. Straddle carriers place them on railroad cars. Piles are transported on a 60-ft car, overhanging at both ends.



FLAT CAR carries prestressed piles.

Two beams are carried on two 50-ft rail cars with a 40-ft spacer car between them. Because they not only pivot but slide as the train negotiates a curve, the beams are mounted on a special greased plate that allows two-direction movement at one end of each set of two beams. Delivery is six at a time on a nine-car train.

At the bridge site, the cars are spotted on an 1,100-ft spur leading to the river's edge. From that point, a temporary track will be extended across the river between the two lines of bridge piers.

Massman's plan for building the bridge is based on the fact that the Platte, according to western folklore, is "a mile wide and an inch deep." One-half mile upstream from the bridge site, the contractor will build a sand dike from the near side to the middle of the river. The railroad spur will be extended on a dike across the dry bed of the river as construction of the bridge advances. As the tracks are laid, workmen will install culverts through the dike beneath the tracks. When the halfway mark is reached, the contractor plans to build another dike from the opposite side and divert the river back to flow through the culverts.

Excavations for the pier foundations will be dewatered by wellpoints.

As pairs of piers are finished, a gantry crane will be set on top of each pier. The gantries will lift the beams from the railroad cars and move them transversely into place on the piers. As construction progresses, the gantries will be hoisted from pier to pier by cranes. Completion of the bridge is scheduled for the end of this year.

For the Nebraska Department of Roads, John H. Hossack is acting chief engineer; G. S. Strobel, acting deputy chief engineer; and A. H. Dederman, bridge engineer. Jack Way is general manager and John Heald sales manager for Nebraska Prestressed Concrete Co.

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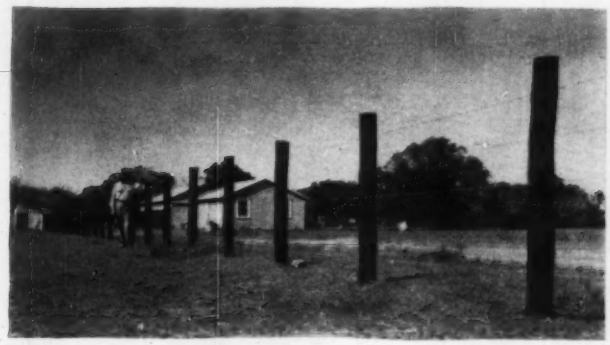

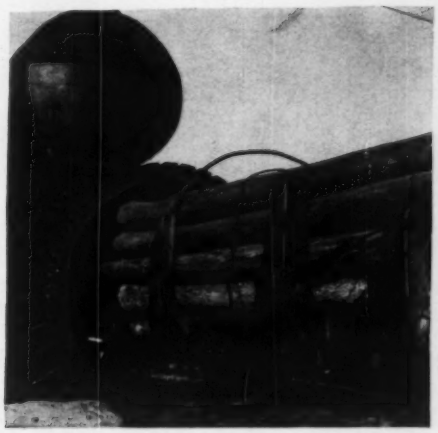

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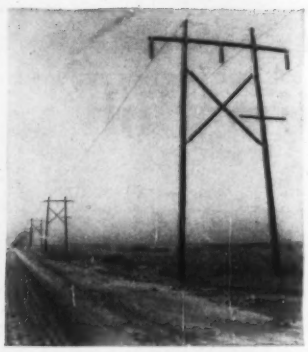

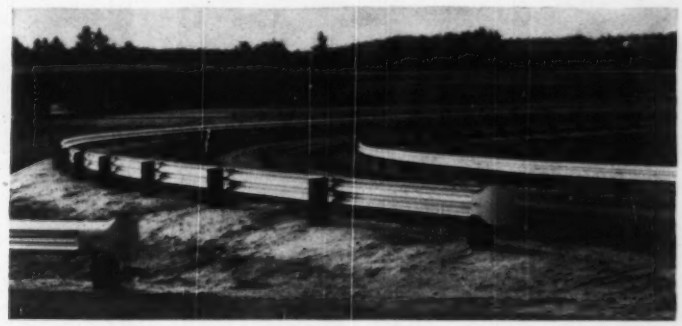

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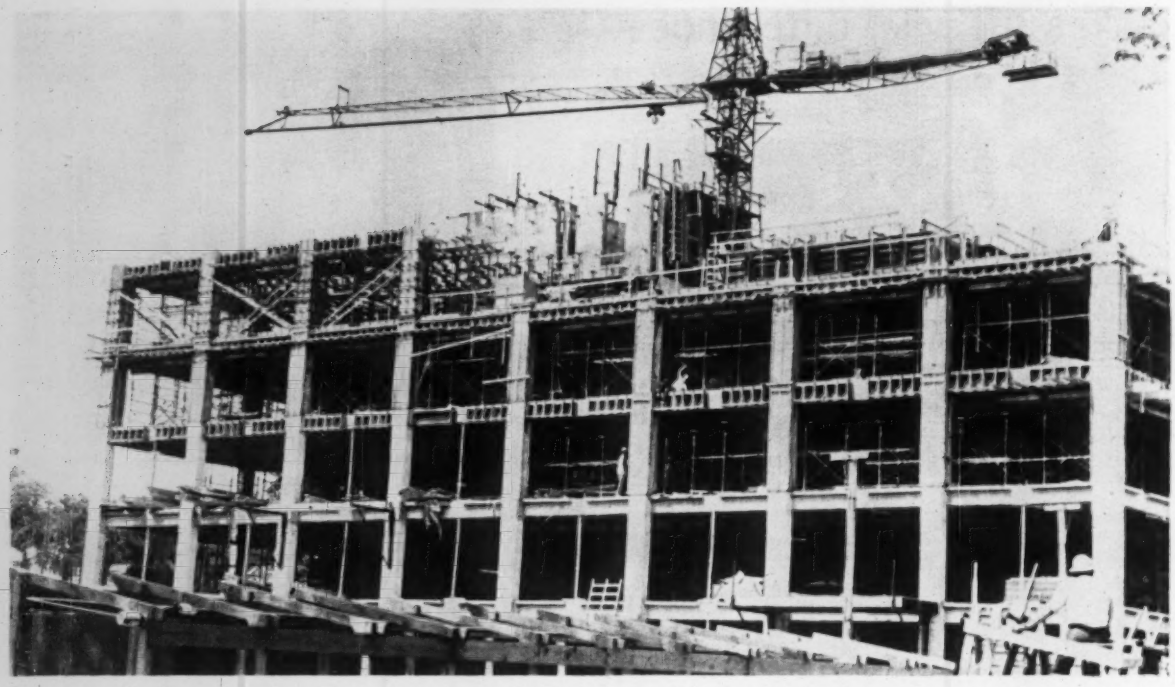


Long reach, hammer-head tower crane climbs upward as construction progresses.

Shipyard Crane Does a Building Job

Peter Kiewit Sons' Co. has modified a revolving tower crane, usually associated with shipyards, for use as a climbing crane in the construction of the new Kiewit headquarters building in Omaha, Neb.

The building, Kiewit Plaza, is a 148x84-ft, 14-story structure with a structural frame of reinforced cast-in-place concrete. Ten floors of the framework have been erected so far and another floor is being added every six working days.

The heart of the erection operation is an electrically driven Linden crane manufactured by F. B. Kroll of Copenhagen, Denmark. When used as a climbing crane, the Linden rig has a mast only 42 ft high; it stays on top of construction by lifting itself upward as work progresses.

The complete unit can be raised from one building level to the next in about 3½ hours. When in operation it can spot a 3½-ton load anywhere within a 100-ft radius.

The rig as set up for Kiewit has had its mast extended to 60 ft and its basic 98-ft jib shortened to 82 ft. The counterjib is 45 ft long. It carries 7,760 lb of concrete counterweights and the hoisting motors.

Both the jib and counterjib are cable-supported from the top of the tower. The jib has a triangular cross-section and is erected with one apex down; at this apex is a monorail on which the hoisting trolley travels. The counterjib is an open lattice box section.

The mast is set in, and held vertical by, the sides of a 4½-ft-sq opening left during construction between two elevator shafts. The operator has a station just below the jib, but he's not restricted to this position. A 4-lb remote control box permits him to operate the rig while moving around to points of good visibility. The use of signalmen is reduced and accuracy of control is increased.

The unit was modified by suspending a third sheave from the center of the lifting trolley to increase the lifting line from two to four parts (see picture). This boosts the lifting capacity of the machine and, by slowing down lifting block movement, increases accuracy of control.

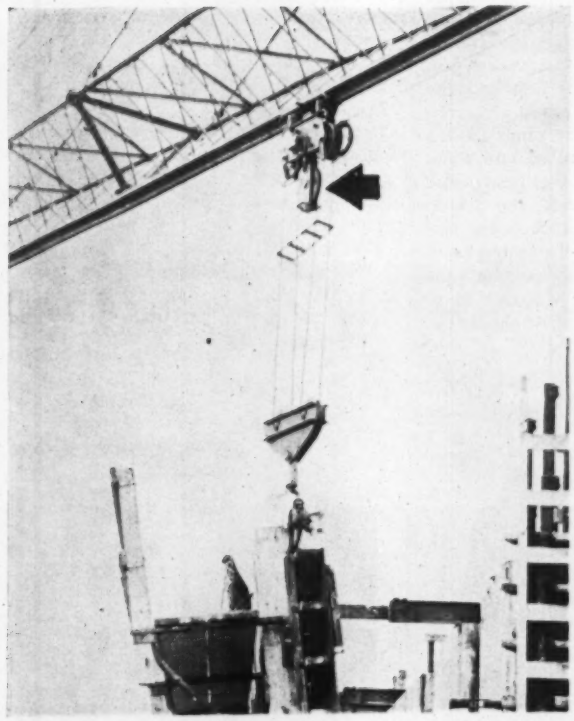
On the job site it was discovered that lengthening of the mast required a relocation of the mast lifting motor to achieve a smooth cable run. (The importance of this change was immediately recognized by the manufacturer and he is already including it in his larger machines through the use of a longer motor-frame mount.)

In another change the contractor substituted a 30-hp motor for the manufacturer's 20-hp motor at the lifting drum. This motor is equipped with a brake assembly to prevent sudden, unexpected load drop.

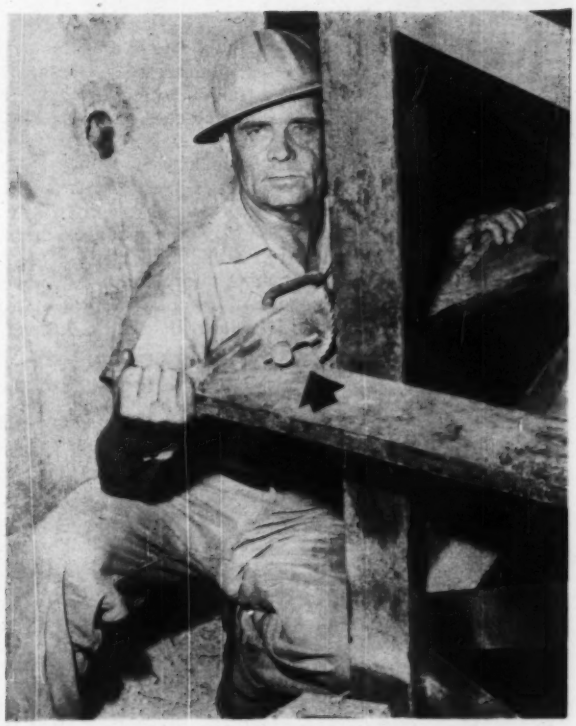
The most important modification is a job-fabricated mast brake. The mast is raised and supported by cables running through sheaves at its base and at a lifting frame above. During the initial mast raising on the job, workmen blocked up beneath the base of the mast so that it could not fall if this cable were to break. The blocking job was time-consuming and difficult. The mast brake eliminates the need for this blocking.

The brake is a two-piece collar made of plate. The plate is shaped into two flat U's, which can be bolted together to form a flat hollow rectangle. The inner edge of the rectangle fits snugly about the mast. The width of the frame is great enough to provide bearing for it on the floor surfaces adjacent to the opening through which the mast works.

At each corner of each U is mounted a safety "dog" with a serrated edge. Each dog is mounted eccentrically on a

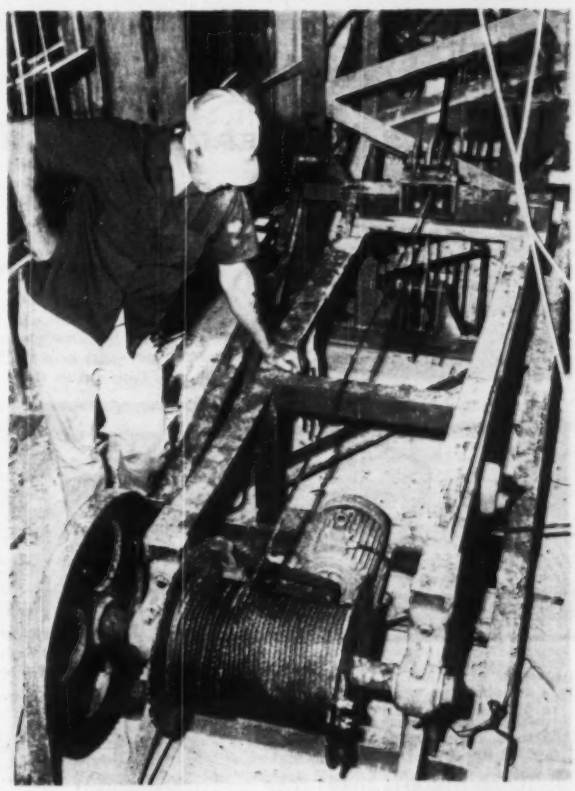


Extra sheave (arrow) doubles parts on hoist line.



Mast brake (arrow) increases safety.

Remote control panel is light and easy to use.



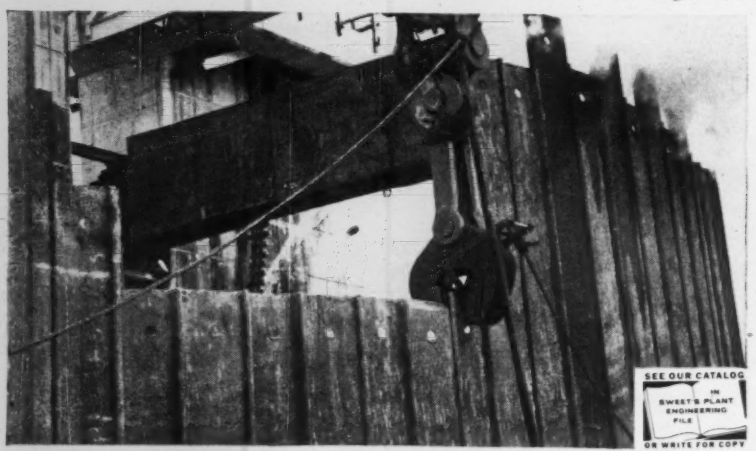
Angles extended climbing drum frame.

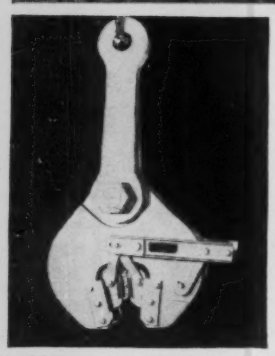
NEW HEPPENSTALL TONGS PULL PILING FASTER, SAFER

First used by Dravo Corporation in construction of the New Cumberland Dam at Stratton, Ohio, these new Heppenstall Tongs make the initial pull without manual attachment to the piling. Suspended from a piling extractor with jaws locked open, the Tongs are lowered over the piling. Slackening the control line disengages a retaining pin, which closes the Tongs. A wedge action causes the jaws to grip tighter as pull is increased. When the line is pulled, the jaws again latch open ready for the next piling.

Made in 30- and 50-ton capacities, the tongs have a ¼-inch minimum jaw opening, 1¼-inch maximum. Each jaw has a series of teeth to insure positive gripping. The 30-ton tongs weigh roughly 1,150 pounds, the 50-ton tongs about 1,650 pounds. Connecting brackets are furnished to fit the particular type of extractor being used.

For more information, and a quotation, contact your Heppenstall Company Representative or Materials Handling Division, 501 Sixteenth Street, New Brighton, Pa.





Designed by Heppenstall, these new Tongs pull sheet piling without need for clevis pins or other manual attachment.

HEPPENSTALL COMPANY
Pittsburgh 1, Pennsylvania
PLANTS: Pittsburgh and New Brighton, Pa.
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MIDVALE-HEPPENSTALL COMPANY
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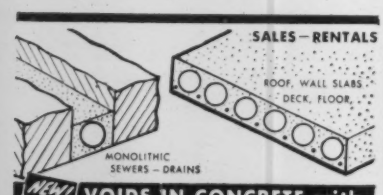

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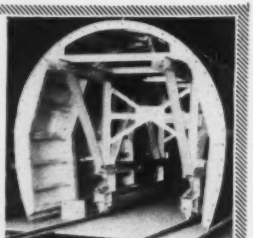
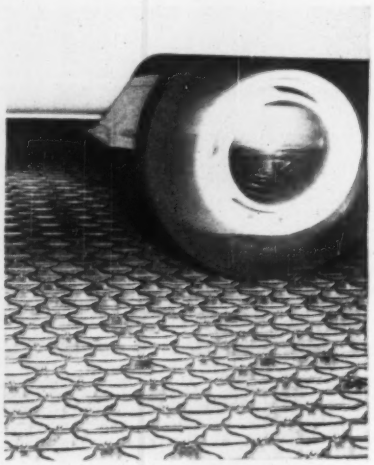


MAYO
TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.

pin and its teeth are canted to point upward when the dog is in braking position (see picture). Thus when the boom is being raised its side angles lift the dogs slightly for free passage.

Should the boom drop, its side angles would engage the teeth, cause the dogs to rotate slightly downward. Because of eccentricity of the mounting, the four dogs would then wedge against the side angles of the mast and stop its downward movement.

In a test the mast brake proved so effective that release of the mast lifting cable resulted in less than ¼ in. drop of the mast.



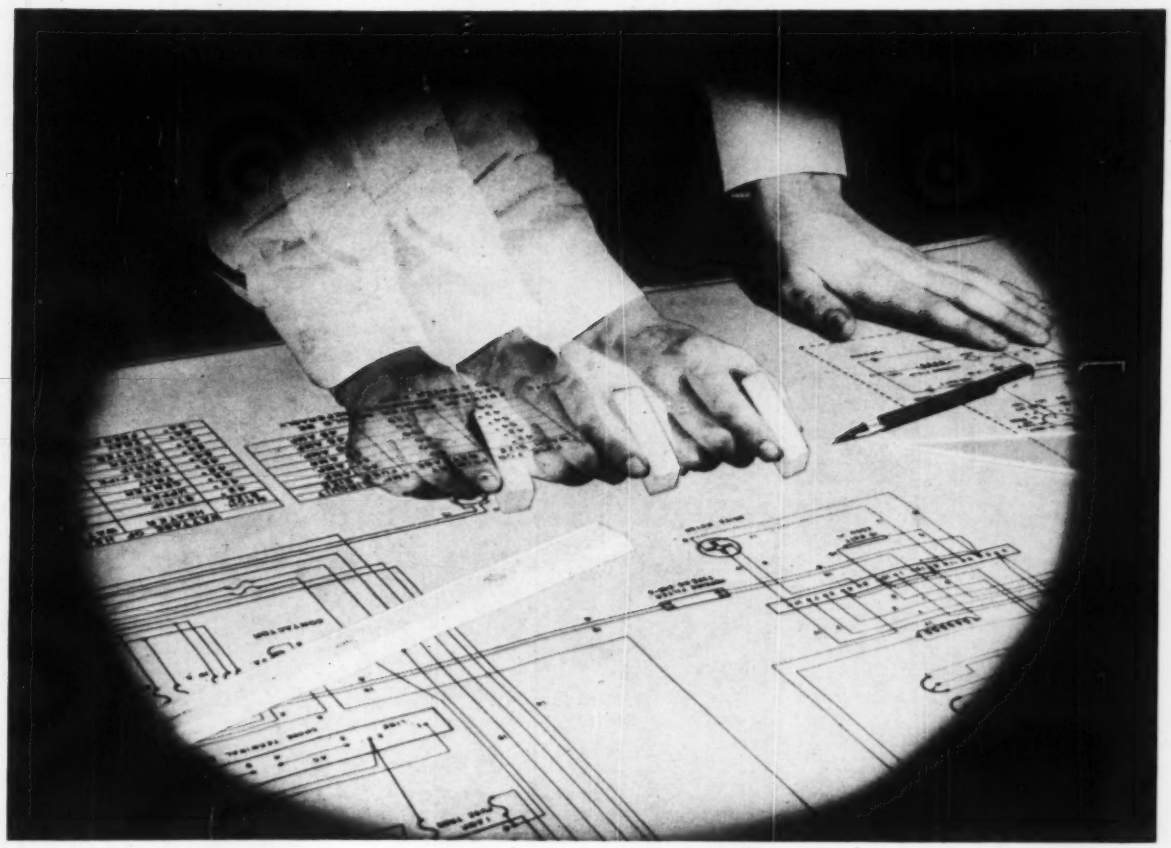
Studs Welded to Bridge Reduce Skidding Danger

Workmen have end-welded 120,000 Nelson studs to the steel grid decks of the transition spans of the Lake Washington floating bridge in Seattle to reduce peril of skidding. To compensate for changes in level of the water in the lake, the floating section of the bridge is joined to the land approaches by open steel gratings. When the grids became icy or wet, there was some danger of skidding.

Welding was done over a period of three months, with traffic maintained in three of the bridge's four lanes. Work periods were limited to 5½ hours per day, a total of about 2,300 man-hours. Three stud welding guns were operated from two battery units.

Each gun operator and an assistant loading studs and ferrules could weld five or six studs per minute per man, making 5,000 to 6,000 studs per day for the three teams. Studs were grooved to finish weld at a height of ⅜ in.

Total cost of the project was $14,900, said P. J. McKay, district engineer for Washington Department of Highways.



Make this erasure test and see for yourself why . . .

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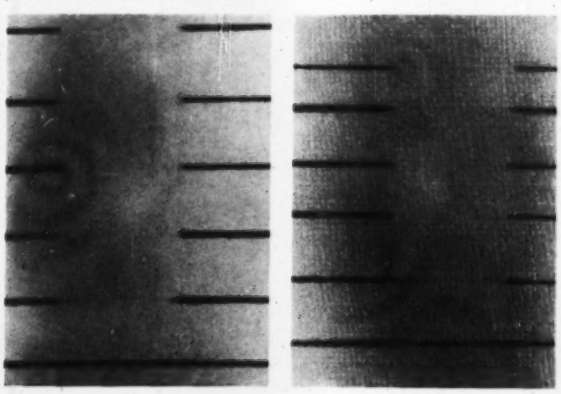
A good example of the consistent, balanced surface of CRONAFLEX is its superior *erasability*. CRONAFLEX not only erases easily and cleanly; it takes repeated erasing without ghosting or surface damage.

To prove it, make this simple test: draw a series of 6 lines horizontally on CRONAFLEX. Erase a vertical path through each line as you draw it, with a stroke long enough so that each succeeding line is drawn through another erasure. Now make the same test on the best grade of pencil cloth you have and compare the results. For more proof, reproduce each sample in a diazo machine and compare the prints.

Notice how cleanly and evenly CRONAFLEX (left) erases, without smudging or ghosting. Notice density and consistency of bottom line, drawn through 5 erasures! Compare same test made with good grade of pencil cloth (right). Bottom line drawn through erasure path is not uniform; erasures are uneven.



Superior covering power, cleanness of erasures and consistent line density—despite repeated erasing—are just a few of the reasons why CRONAFLEX gives you the best drafting surface you can use. For others, contact your local Du Pont Technical Representative or call your local Du Pont Photo Products Sales Office listed below. E. I. du Pont de Nemours & Co. (Inc.), Photo Products Department, Wilmington 98, Delaware. In Canada: Du Pont of Canada Limited, Toronto.

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"The 14-inch J&L Light Beam was the most economical member we could use for the spans," say Robert and Company Associates of Atlanta, the designers.

New Atlanta Airport Terminal...Designed

Air traffic comes in, all at once, in Atlanta, Georgia. Often there are as many as 60 planes in the terminal, all loading and unloading. Atlanta is one of the most important airlines transfer points in the country. Everyone wants to hold lay-over times to a minimum, so heavy traffic peaks are unavoidable.

The problem was to design a new terminal that would make life easy for passengers and airlines people. And do it as inexpensively as possible.

That's why the compact, 11-story central terminal building (with control tower on top) was conceived—with six long concourses splayed out like fingers to provide plenty of parking space for planes—with easy access everywhere for passengers and airlines personnel — with 8 special second-story "jetways" that telescope out from above the concourses to let jet passengers on and off with no stair climbing, high and dry out of the weather — and with underpasses beneath each concourse for baggage trains to run, safely separated from passenger walks.

Design Economy was gained in concourse construction and in stair stringer fabrication by selecting J&L lightweight structurals — 14-inch J&L Light Beams for concourse and main terminal roof purlins — 10-inch J&L Junior Channels for stair stringers.

Because they are easy to adapt, you can use J&L lightweight structurals in a wide variety of architectural designs. They reduce the steel tonnage you'll require. And because they're easy to fabricate, raise, and position, they cut labor costs.

To find out more about J&L lightweight structurals, call or write direct to *Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.*

J&L STEEL

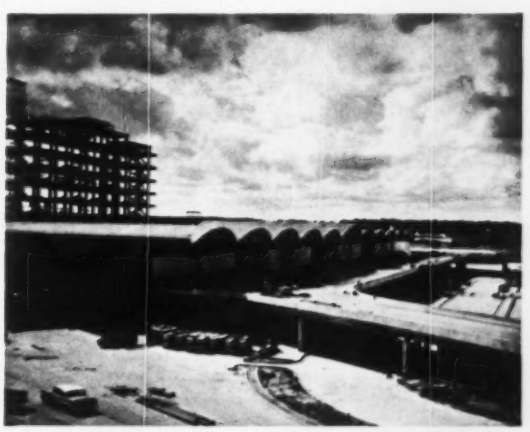
Jones & Laughlin Steel Corporation

3 Gateway Center, Pittsburgh 30, Pennsylvania

Steel

for the Jet Age with J&L Light Beams

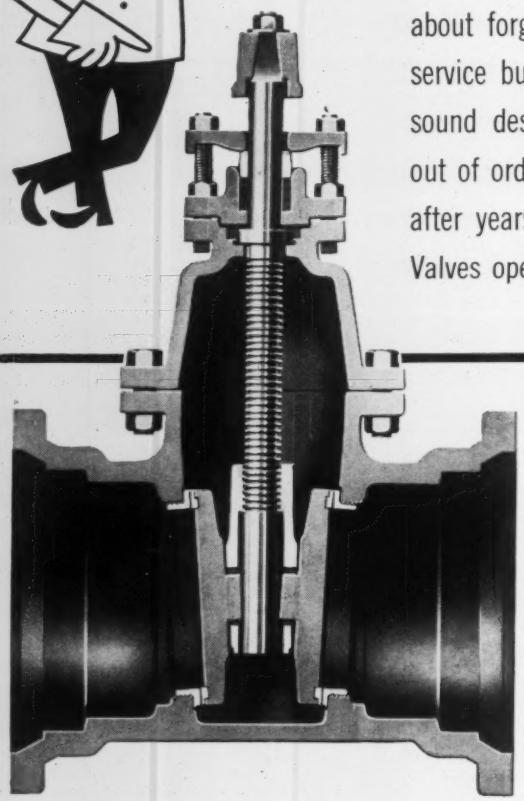
Key factor in concourse design was use of J&L 14-inch Light Beams as purlins. Span between rigid bents varies from 19′ 7″ to 24′ 0″. Formed metal decking, which supports insulation and built-up roofing material, is welded to the purlins. Purlins and girders also support a maze of concealed piping.



J&L 14-inch Light Beams and J&L 10-inch Junior Channels were used extensively throughout the new "Jet Age" Atlanta Airport Terminal. J&L 10-inch Junior Channels were used as stair stringers. J&L 14-inch Light Beams are purlins, mainly in two-story concourse sections.

THE R. D. WOOD GATE VALVE

Bury it, yes, and if R. D. Wood made it, you can just about forget it, too. There are generations of reliable service built into the R. D. Wood Gate Valve. Simple, sound design is the secret; no delicate parts to get out of order, no pockets to fill up with sediment. Even after years of idleness in the lines, R. D. Wood Gate Valves operate easily, smoothly.



ONLY THREE MOVING PARTS:

The spreader and two discs comprise the complete internal mechanism. In closing, gates are first lowered into position before spreading action begins. Then spreading pressure is distributed evenly from the hub to permit the discs to seat without distortion. Both discs are equally tight against pressure from either side of valve.

AND THESE FEATURES, TOO: Made of thoroughly seasoned castings, rigidly inspected and tested to 300 pounds hydrostatic pressure. Available with bell, mechanical joint or flange pipe connections; conventional or "O" ring packings.

Conform to latest AWWA specifications

R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers also of Mathews Modernized Hydrants, Mathews Flange Barrel Hydrants, R. D. Wood Hydrants, and "Sand-Spun" Pipe (centrifugally cast in sand molds)

Packaged Units Treat Chrome, Cyanide Wastes

Two units by the same maker are designed for the treatment of chemical wastes.

One is a unit for the treatment of chromium plating wastes. The maker claims it reduces toxic hexavalent chrome to innocuous trivalent chrome through the controlled addition of sulfuric acid and sodium metabisulfite. It then neutralizes the remaining liquor by the controlled addition of caustic soda.

Contamination of chromium rinse waters is thus reduced to an acceptable level for discharging into municipal sewers or streams.

The other unit treats cyanide wastes by the use of sodium hypochlorite. The unit has a capacity to convert cyanide to cyanate at the rate of one pound per hour. GEORGE L. NANKERVIS CO., 15300 FULLERTON AVE., DETROIT 27, MICH.

Sink-to-Sewer Drains Of Plastic-Lined Pipe

A non-corrosive drain line system for public buildings, industries and institutions makes use of Saran-lined pipe and simplified fittings of ductile iron.

The fittings are designed for ease of installation and service between normal wall partitions.

Union type fittings are used with round connector nuts that can be tightened with a spanner wrench. The installation can be made with a simple O-ring gasket without caulking.

The system is designed to permit piping of waste acids, alkalies or solvents from the sink to ceramic sewers. The plastic-lined pipe is said to be serviceable in temperatures from below zero to 200 F.

Line and pipe sizes to be marketed are 1½, 2, 3, 4, and 6 in. SARAN LINED PIPE CO., FERNDALE, MICH.

Valves Discharge Water At Heads Under 200 ft

The Howell-Bunger line of valves to regulate water under free discharge has been expanded to include a new lighter valve for use at heads under 200 ft.

Sizes range from 12 in. to 108 in. in 6-in. increments. The valve is fabricated of steel plate. It has two operating gears on a shaft through the body. The throttling range is from "fully open" to "fully closed."

The driving mechanism consists of a floor stand and a gear unit with manual or motor drive. ALLIS-CHALMERS, MILWAUKEE 1, WIS.

Ford Manufactures a Lift Truck

The Ford Motor Co. now manufactures lift trucks. Known as the Series 4,000 Ford Heavy Duty Fork Lift, the unit will be sold and serviced by 2,500 dealers of Ford tractors and equipment.

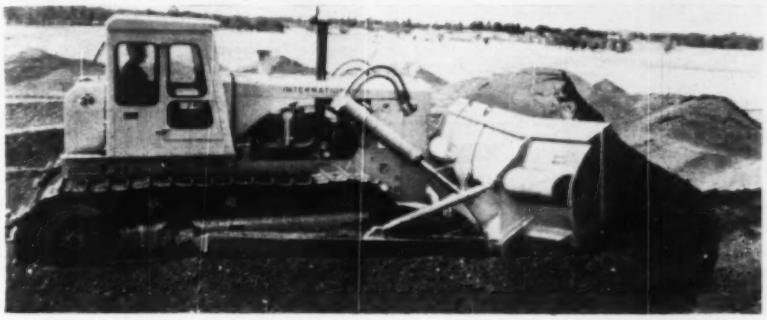
The fork lift comes equipped with either a gasoline or a diesel engine of 172-cu. in. displacement. It is offered with four stacking heights—10, 12, 16 and 21 ft, and two- and three-stage masts. The 10- and 12-ft lift trucks can handle loads of 4,000 lb.

Adjustable forks with 42 and 60-in. face plates are available for handling bulk materials and all standard-sized pallets and skid boxes.

The unit has a low center of gravity —height to the top of the cab is less than 8 ft. It also has power steering. The mast can be tilted hydraulically 6½ deg forward and 13½ deg backward, and the load can be shifted 6 in. from side to side by lateral movement of the forks, according to the manufacturer.

Controls include an optional reversing transmission gear shift.

The lift-truck parts are reported to have wide interchangeability with standard Ford tractor components. FORD MOTOR CO., TRACTOR AND IMPLEMENT DIVISION, BIRMINGHAM, MICH.



Coal Blade Doubles Dozer Load

The Rish coal blade is said to double the capacity of standard dozer moldboards and triple the economical pushing distance of conventional dozers. It is available for use with International TD-25, TD-20 and TD-15 crawlers.

In recent tests the TD-25 pushed blade loads averaging 20.9 tons at 2.55 mph average speeds, according to the manufacturer.

The TD-25 blade is 15 ft, 6 in. long, 6 ft high and weighs 5,080 lb. The TD-20 blade weighs 2,200 lb, is 12 ft long and 5 ft high. The TD-15 blade is 12 ft long, 4 ft high and weighs 1,600 lb. The blades are manufactured from high-carbon steel and can be used with direct-lift hydraulic or rear-mounted cable control units. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

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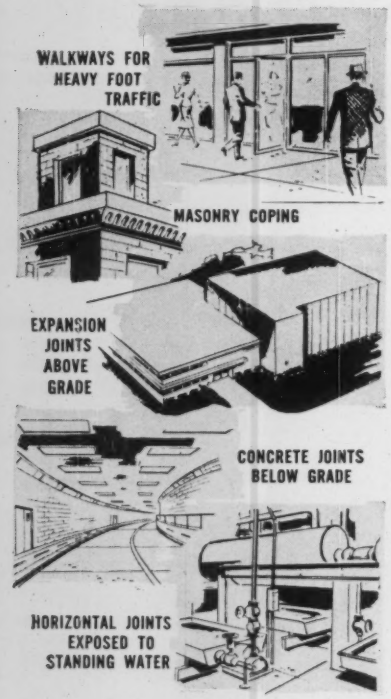
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Servicised Vertiseal is a cold applied, general purpose self-curing joint sealer for positive sealing of horizontal or vertical joints. It is a two-component material manufactured with Thiokol* Polysulfide Liquid Polymers, and is available in widely used standard colors —Gray, Black, and Tan. In addition to its other qualities, Vertiseal is resistant to petroleum derivatives, most common acids, fats, and alkalis. Write for Technical Bulletin and Catalog.

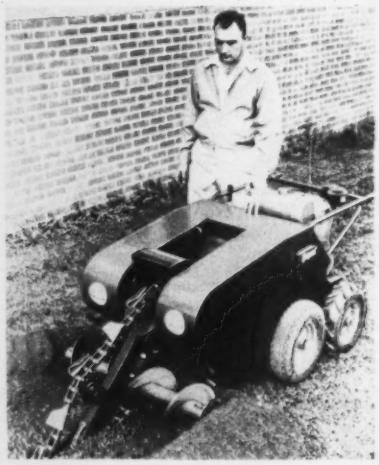
*Thiokol is a registered name of the Thiokol Chemical Corporation

SERVICISED PRODUCTS CORPORATION
6051 W. 65th Street Chicago 38, Illinois

Corrugated Truck Body Is Lighter and Stronger

Model 35SL has a weight-saving corrugated body that increases the unit's capacity from 35 to 37 tons. The corrugations also are said to increase the body's rigidity and durability.

The machine has 450-hp diesel engine, a three-speed transmission and three-stage torque converter with downhill braking feature. KW-Dart Truck Co., Kansas City 41, Mo.



Self-Propelled Trencher Tows to Job Site Easily

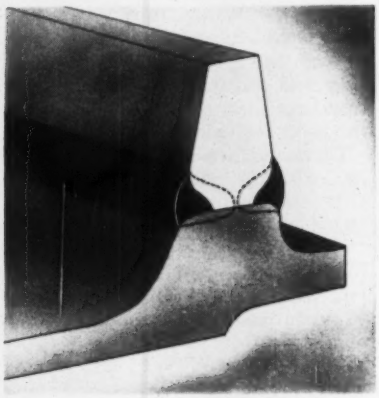
A trencher designed to dig 3-in., 4.5-in., and 6-in.-wide trenches, can advance trenches as deep as 5 ft at speeds up to 500 ft per hr, its maker says.

Transport wheels, which raise and lower hydraulically, and a retractable draw bar make it possible to tow the unit with any vehicle, according to the manufacturer.

The trencher body is a single-unit of heavy steel plate reinforced and electrically welded. The drive is four-wheel in both forward and reverse.

The digging boom is lifted hydraulically through an arc of 186 deg. Digging bits, said to be non-clogging, are mounted on a digging chain claimed to have a tensile strength of 24,000 lb. Two-way dirt disposal is also a feature of the trencher.

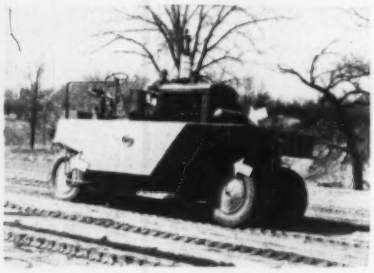
The Compact, as the unit is called, is powered by a 9-hp Wisconsin engine. Auburn Machine Works, Auburn, Neb.



Grouser Bar Designed For Easy Installation

The "Grip-Lug" grouser bar is said to cut installation time as much as 43%. The bar is shaped to permit welding to a worn grouser with one pass of the welding rod.

The design is said to insure perfect base penetration bond and allow the use of low cost rod regardless of welding method. Grouser bars are made from shock-resistant alloy steel that work-hardens on the job. Allied Steel & Tractor Products, Inc., 7835 Broadway, Cleveland 5, Ohio.



Roller Power Unit Permits 'On-the-Run' Tire Inflation

An "on-the-run" power inflation device for Bros SP-730B self-propelled pneumatic tire rollers permits a roller operator to increase and decrease his tire pressure while his machine is in operation. It is also available as a modification kit for SP-730 rollers now in the field.

The kit includes a compressor, gages, control stand, air seals, air line (arrows) and tire protection covers. The prin-

Traction and mobility bring major economies to well-known paving firm

Save $50,000 investment — and $4 per hour

This Michigan Tractor Shovel—one of 11 owned by Texas Bitulithic Company, Dallas—has, *by itself*, saved a $50,000 investment *plus*, in most cases, $4 per operating hour.

It alone has replaced a three-unit fleet common to many paving operations. Namely, a 130-plus hp crawler formerly used to pull a big 10,000 lb, 24-30 ft strikeoff planer—*and* another 130 hp crawler and matching scraper used to supply and remove gravel ahead of the planer. "Duplication of these three machines, which were moved to another job, would have cost us $75,000," says L. A. Armstrong, Texas Bitulithic assistant secretary-treasurer. "Their operation would require one more man and $4 per hour more actual operating costs (not counting depreciation, etc)."

Instead, the $24,000, 133 hp, 26,500 lb Model 175A Michigan does both towing and gravel supply-removal jobs.

Torque converter smooths towing operation

On towing operation, Michigan dependability and tractive ability have probably been the most important factors. Machine has four-wheel-drive, weighs 26,500 lbs, so has no trouble pulling the big two-lane planer. Its torque converter drive has virtually eliminated wheel spin, so holes in the sub-grade are no longer a worry. Operator has excellent view of leveler blade, and Michigan's power steer gives the instant fingertip control so necessary to towing any planer. And the dependable Michigan has lost no assigned work-time—so Texas Bitulithic's paving crew has never needed to slow down due to insufficient crowning.

25 mph speeds gravel supply task

On gravel handling, mobility is probably the key factor in Michigan's success. For example, every time material piles high ahead of the planer, the Michigan operator simply stops his machine, detaches a drawbar pin, and drops the planer yoke. In a few minutes, excess material has been Michigan-handled: cast aside or truck-loaded. Similarly, when more material is needed, the 25 mph Michigan runs down the sub-grade to a break in the forms, scoops up a 2¼ yard load, and hurries back. Re-attachment to the big planer takes one man (the Michigan operator) only a few minutes, and planing continues.

Ten other Michigans do varied jobs for pipe, dirt, paving crews

Elsewhere, Texas Bitulithic Company continues to make good use of their *10 other Michigans* (all 80 hp, 1¼ yd Model 75A's). "We run 25 to 30 jobs at a time," explains Equipment Supt R. H. Arnold, "do $15,000,000 to $20,000,000 worth of earthmoving, bridge work, concrete and asphalt paving per year. We put one 75A on each major job . . . shuttle our other Michigans, under their own power, between two to five smaller jobs each. Tasks include hauling concrete from mixers to pour sites. Carrying pipe. Truck-loading sand, gravel and dirt. Leveling parking lots. And many, many others."

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NEW briefcase-size universal computer adds and subtracts not only **decimal** amounts, but also **feet, inches** and **fractions** down to **sixteenths.**

It **converts** inches, **reduces** fractions **automatically:** the result is always in simplest form.

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642 North Chester Avenue, Pasadena, California

cipal advantage of the unit is that it permits a roller operator to change compaction weight per sq in of ground contact area without stopping.

This is particularly advantageous in stage compaction of soft wet subgrade materials, since the roller can be started with low pressure and wide contact area, then build up to high pressure and narrow tire contact area without any cessation of compacting. Bros Inc., Road Machinery Division, 1057 10th Ave., S.E., Minneapolis 14, Minn.

Small Plant Treats Sewage in Single Tank

A sewage-treatment plant designed to serve industrial plants, motels, shopping centers and similar projects with population groups ranging from 75 to 300 aerates the sewage with air at normal atmospheric pressure.

The unit aerator entrains air, mixes and recirculates sludge and clarifies within a single tank.

Because the plant operates without air compressors, there is little noise—an advantage in motels, trailer courts, etc. Infilco Inc., Tucson, Ariz.

Water Cools, Lubricates Submersible Pump Motor

Turbine pump motors that are cooled and lubricated by water are designed for 10 in. or larger well casings.

The motors are rated at 30 to 250 hp, three-phase, 60-cycle, 1,800-rpm. Submersible in water at a maximum temperature of 40 C, they are designed for deep wells, or booster or process applications.

Using water as the cooling and lubricating agent eliminates bulky and hard-to-maintain pressure systems.

An extra-large water filter prevents entrance of foreign matter and reduces danger of clogging with sand and silt. Shaft seals in the bracket force the water to travel along the shaft and through the filter. Epoxy coating on the windings protects against any silt that may enter.

Kingsbury-type thrust bearings are included to withstand hard service. Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.

Rig Speeds Blast Hole Drilling

A crawler-mounted drill rig, designed for vertical, horizontal and inclined blast holes is available in two models, one for 4-in. holes, the other for 2½- to 3-in. holes.

Drilling time with the rig is cut significantly by a new type of drifter, the manufacturer reports. Sinking a 4-in. hole with the new equipment takes about the same time as a 3½-in. hole with older drifters, according to the manufacturer.

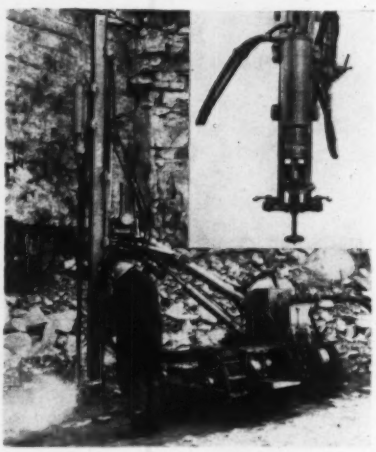
Both models operate with forward or reverse rotation or can be set in neutral.

A hydraulic pump driven by an air motor powers the feed and support arm.

The feed shell is 6-in. welded channel steel and has a positive feed-locking arrangement. Replaceable bushings for drill-steel centering and a stabilizing foot pad are also a part of the feed-shell assembly.

Crawler assemblies are driven by individual 7½-hp, reversible, piston-type air motors.

A low center of gravity and 10-in.-



wide tracks provide excellent stability in rough working areas, according to the maker. Tracks are spring loaded to maintain the right tension. Idler rollers can be removed individually for inspection. Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.

The season's most unusual job

Geo. M. Brewster & Son, Inc solution includes use of one Dozer, this big 375 hp Michigan, to spread 25,000 yds daily on 3 fills

How would you handle a job where the state-specified borrow pit was on an island and the main fill was across 400 ft of river water . . . and where there were no bridges in between?

This was the puzzling problem faced by bidders on a 1,400,000 yd, 4 mile section of Route 129 Freeway near Trenton, New Jersey.

Would you dredge? Or build trestles? Or use barges? Or what?

Flood danger makes speed essential

The successful bidder in this case had a different solution. Geo. M. Brewster & Son, Inc, well-known Bogota, N. J. contractor, placed their bid, roughly $4,500,000, on a gamble. They would dam the inside channel of the river on its upstream side, let the water drain, then build several inexpensive earth causeways to the mainland fill area. The question was, "Could they move the necessary dirt quickly enough to avoid high water?" For this river, the Delaware, has been known to rise at least 15 feet above its present normal stage.

Fast mobile equipment and two 10-hour shifts per day were the basic choice. Yet for economy reasons a relatively small fleet did all work. A tractor-pulled and pushed belt-loader did the loading. Ten 16-yd bottom-dumps moved the fill. One machine—a high-speed 375 hp Michigan Model 380 Tractor Dozer—handled *all* spreading.

Michigan replaces 2 or 3 crawlers

Brewster figures that because of its 25 mph speed and its power, the big Michigan replaced two or three large crawler dozers. *Working alone, it easily handled three separate dumping areas,* spreading 25,000 yds of soft silty sand per 20 hour day.

Thus dirtmoving was completed long before flood season. Use of the big Michigan had cut costs in some extremely important ways. One, it alone did the work of several big crawler-dozers. Two, it completely eliminated track maintenance and repairs, which in sand like this, could total $10 per hour, or more! Three, it proved versatile enough to spread gravel sub-base as well as sand fill, handle emergency truck towing, and do much of the compaction on all 3 fills.

Michigan job-proved Tractor Dozers could do the same for you! Pick the size to fit *your job*—162, 262, 375 or *600 hp*—then call your Michigan Distributor for a demonstration. You name the time and place.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

2401 Pipestone Road
Benton Harbor 16, Michigan
In Canada:
Canadian Clark Ltd.
St. Thomas, Ontario

New Products Briefs

• **Wire rope slings**—"Hi-Pli" slings offer the flexibility and non kinking of hemp rope plus the strength of steel because of patented preforming processes, the manufacturer says. Built from a combination of individual wire ropes, not strands, laid around a steel center core, the Hi-Pli slings are coated with a bright galvanized finish in 12 different rope diameters up to 2 in. American Chain & Cable Co. Inc., 929 Connecticut Ave., Bridgeport, Conn.

• **Plastic for coilable pipe**—Black plastic resin, Marlex TR-212, is designed for use in the plastic pipe field, particularly for coilable pipe for cold water service. Pipe extruded from the plastic is said to sustain a hoop stress of 1,800 psi for 1,000 hr at 80 F. The plastic is approved by the National Sanitation Foundation for use in pipe that will carry potable water. Phillips Chemical Co., Bartlesville, Okla.

• **Pipe coupling**—More inside space and a heavier wall are features of an improved pipe coupling, the maker says. Greater deflection of the open ends of pipe is possible. The heavier wall guards against corrosion and can handle greater distribution pressures. Tapered rubber gaskets are compressed against pipe by take-up nuts. Norton-McMurray Manufacturing Co., 919 N. Michigan Ave., Chicago 11, Ill.

• **Rock drill**—"Mole-Dril," designed for hard-rock drilling in construction, quarrying and mining operations, is available in three sizes, ranging from 4 to 6 in. in diameter. With just three moving parts—valve, hammer, and piston—"Mole-Dril" is easily disassembled and maintained, according the manufacturer. Gardner-Denver Co., Quincy, Ill.

• **Quiet little pump**—A portable 13-lb pump is available for use by utility-company maintenance crews and city sanitation departments. Its ½-hp motor operates on ac or dc and is said to do so quietly. Operating range is from 2 gpm under 102-ft head, up to 18 gpm under 37 ft of head. Gorman-Rupp Co., 305 Bowman St., Mansfield, Ohio.

• **Cracksealer**—Lastek 33 is a rubberized liquid sealer for cracks in asphalt and concrete pavements. Manufacturer recommends it for all cracks less than ⅜ in. wide. It is applied by pouring from small nozzle cans or cones. The material is available in 1 qt. plastic squeeze bottles or 5 gal. cans. Maintenance Inc., Worcester, Ohio.

• **Nonslip coatings**—Dura-Grip surfacing compound is an anti-slip material combining fine tough grit in a resin bonding agent. Two-coat application to prepared surfaces will sustain heavy traffic within 16 hours. Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.

• **Electric tools**—Two anti-ratcheting clutch drivers for continuous uniform fastening are available with precise torque adjustment. Models 235 and reversing Model 272 are available in standard 115 volt assemblies. 220 and odd voltages furnished on request. Skil Corp., 5033 Elston Ave., Chicago 30, Ill.

• **Small electric plant**—A 2-kw electric plant is powered by an air-cooled engine and, the maker states, is lightweight, compact and economical. A single-phase generator supplies 60-cycles ac, at 115 v or 115-230 v. The single-cylinder, four-cycle engine is of large bore, short stroke design and features automatic spark advance. Kohler Co., Kohler, Wis.

• **Prestressed concrete plank**—Machine-made prestressed concrete Leap plank provides clear spans up to 40 ft. in a hollow core plank available in a standard 8 in. x 24 in. section. Capacity varies from 215 psf at 14-ft span to 43 psf at 40-ft span. Leap Structural Concrete, Inc., 165 Alexander St., N.W., Atlanta 13, Ga.

• **Seamless welding fittings**—A line of seamless carbon steel welding fittings is available in all types, in sizes ranging through 24 in. Each fitting is made round for its full length. This permits segmenting at any point. Both ends are machined simultaneously with the fitting in a fixed position to assure fittings that are plumb and square. Midwest Piping Co., Inc., Second and Barry Streets, St. Louis, Mo.

• **Retainer guide for valve**—A disk retainer guide made of Delrin, an acetal resin, will replace the stem and stem guide in a line of foot and line-check valves. Valve life is said to be extended by this change. White Flomatic Div., Flomatic Corp., Hoosick Falls, N. Y.

• **Nylon piston rings**—Filled nylon piston wear rings are available in most standard sizes from 2½ to 7½ in. for heavy-duty hydraulic cylinders in off-the-road equipment. Garlock, Inc., 445 Main St., Palmyra, N. Y.

• **Vibratory roller**—Model 4T tractor-drawn vibrating roller is powered by a 32-hp, air-cooled gasoline engine with 12-volt battery, electric starter, generator, 35-gal fuel tank and remote throttle control. The 8,000-lb vibratory roller develops 1,600 vibrations per minute and is said to produce compaction forces equivalent to a 20-ton dead weight roller. Western Equipment Division, Douglas Motors Corp., 1234 N. 62 St., Milwaukee 13, Wis.

• **Fire hydrant meter**—A meter said to give at-a-glance readings of exact quantities of flow from a fire hydrant during any delivery is now available. The maker states that the meter registers total flows above 30 gpm within an accuracy of 2%. The meter weighs only 23 lb, has standard hose and hydrant couplings. Hersey-Sparling Meter Co., 225 No. Temple City Blvd., El Monte, Calif.

• **Valve for filters**—A valve said to offer improved flow is incorporated in all Dorr-Oliver drum and disk filters. The maker says all internal obstructions are eliminated. Valve will be supplied at no price increase for all single and dual-solution applications of continuous filters. Dorr-Oliver Inc., Stamford, Conn.

• **Expansion joint covers**—A line of architectural aluminum expansion and seismic joint covers is available for use with any type of floor or floor-to-wall junction and at wall and ceiling junctions. The Wedge-Tite joints may be used for openings from 1 to 6 in. in width. With special assemblies offering up to a full 6 in. of movement in the joint. Architectural Art Mfg. Inc., 3239 North Hillside, Wichita, Kan.

• **Industrial engines**—Ford's 292-cu-in. gasoline and 172-cu-in., four-cylinder diesel industrial engines are also available as complete power units fitted with instrument panel, radiator and sheet metal housing. Many parts on the diesel engine are interchangeable with the company's 172-cu-in. gasoline engine. Ford Motor Co., Box 608, Dearborn, Mich.

• **Concrete tester**—Model FT-20-E, featuring a permanently-mounted, constant-flow electric pump, is designed for job-site compression of concrete cylinders. Weighing 540 lb, the machine has a maximum load rating of 250,000 lb. Forney's Inc., Tester Division, P. O. Box 310, New Castle, Pa.

• **Fork lift attachment**—A side shifter and a combination side shifter-slope piler attachment are available for Clark Yardlift Fork Trucks of 15,000- to 20,000-lb. capacity. The side shifter eliminates excessive truck maneuvering and the combination attachments lets the operator align forks with a load which is not level. Both units use standard forks and can be installed in place of the standard fork carriage. Standard spread of 47 to 80 in. is available on either carriage. INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT CO., BATTLE CREEK, MICH.

• **Ear plugs**—Protection against construction noise is offered by an inexpensive ear plug named Com-Fit. It's molded of silicon rubber. SIGMA ENGINEERING CO., 1491 VINE ST., LOS ANGELES, 28, CALIF.

• **Heaters**—Three sizes of oil-fired heaters—125,000 BTU, 250,000 BTU and 500,000 BTU—and a natural gas 2-million BTU heater are included in the manufacturer's new line. AEROIL PRODUCTS CO., INC. 9 WESLEY ST., SOUTH HACKENSACK, N. J.

• **Rubber-cushioned floor**—"Ceramaflex" floor tile is made of 1-in.sq ceramic units fused into a rubber grid. The tile is difficult to scratch or mar, is slip resistant and resilient, claims the manufacturer. It comes in units 9 in. sq and 7/32 in. thick, and in a variety of mosaic patterns. UNITED STATES CERAMIC TILE CO., CANTON 2, OHIO.

• **Colored epoxy adhesive**—Bondall is an epoxy adhesive available in a variety of colors for one-step application to concrete, metal, glass fiber, or wood. The material is completely water proof and non-toxic the maker says. JASAR, INC., 89 MEADE AVE., BETHPAGE, N. Y.

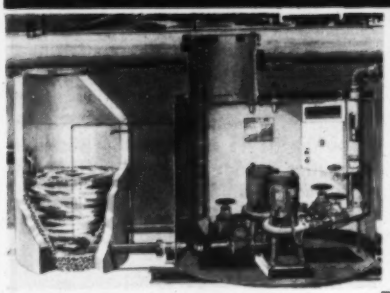
• **Salt resistant coating**—After five years of development, Guard Kote 140 is being offered as a liquid resinous paving cement which hardens within hours to a thin flexible film to seal concrete paving materials against deicing chemicals and the effects of freeze-thaw cycles. Its adhesion permits bonding of grit or aggregate to give a skid-resistant protective wearing surface. FLINTKOTE CO. OF CANADA, LTD., 30TH ST., LONG BRANCH, TORONTO 14, ONT.

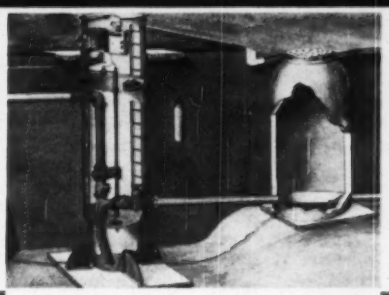
• **Drill record**—Addition of an automatic counting device to a drilling unit makes it possible to record the actual blows of the drive, the maker states. Designed to avoid human error, the device records the number of blows of the drill, which can vary from one or two to the foot, to as many as 100 to the foot. PENDRILL MANUFACTURING DIV., PENNSYLVANIA DRILLING CO., 1201 CHARTIERS AVE., PITTSBURGH 20, PA.

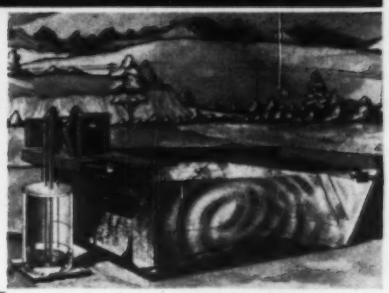
• **Crawlers adapter kit**—Any of the maker's M-3 series trenchers produced in 1959 or 1960 may be crawler mounted using a kit now available. After removing the axle and axle bearings, the crawler may be attached with five bolts. THE CHARLES MACHINE WORKS, INC., PERRY, OKLA.

• **Prefab metal buildings.**—A series of steel buildings is available in a wide range of types and sizes for construction industrial and commercial use. Clear span widths range from 5 ft 4 in. up to 120 ft. Side walls up to 40 ft high and a choice of roof slopes is offered. ARMCO DRAINAGE AND METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Specify Smith & Loveless Factory-Built Quality and Dependability in Your Sewage Projects...*and Save!*







PUMP STATIONS

Smith & Loveless pump stations are available in standard sizes for capacities from 100 GPM to 4500 GPM per pump with two or three pumps per station. Even larger capacity stations may be built to order. Proved in municipal and suburban sewer systems in more than 1200 installations all over the United States, including Alaska and Canada.

PNEUMATIC EJECTORS

Smith & Loveless' complete line of factory-built pneumatic ejectors, like the "Mon-O-Ject", offers a universal selection of lift stations to meet your requirements for lower capacities. Available in sizes ranging from small, single-dwelling sewage ejectors for the home to large duplex "Du-O-Ject" units for stand-by dependability and extra capacity to handle peak loads.

TREATMENT PLANTS

Smith & Loveless factory-built "Oxigest" sewage treatment plants provide low-cost, dependable treatment facilities for motels, factories, schools or subdivisions. Available in single units to serve 10 to 100 homes—or may be installed in parallel, as needed, to serve a growing subdivision. Requires only minimum annual maintenance.

WRITE TODAY FOR OUR FREE ENGINEERING DATA MANUAL ON SEWAGE LIFT STATIONS AND SEWAGE TREATMENT PLANTS
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DIVISION-UNION TANK CAR COMPANY
P. O. BOX 8884
KANSAS CITY 15, MISSOURI
Plant: Lenexa, Kansas

WPCF Moves Consultant Into Its

When Ray E. Lawrence assumes the presidency of the Water Pollution Control Federation next week in Philadelphia, he will be right in his milieu. For sanitary engineering has been his forte since his graduation in 1925 with a civil engineering degree from the University of Kansas.

His first job after graduating was with a Kansas City consulting firm specializing in sewerage and water supply. Today both he and the firm, Black & Veatch, can look back with satisfaction—when they can spare the time. Mr. Lawrence is one of the top men in the partnership and an influential engineer among his professional contemporaries all across the country. And Black & Veatch is ten times as big now as it was when Ray Lawrence first went to work. Construction value of the projects they design has been running about $100 million a year.

The firm he serves has changed in other ways besides size. Water and sewerage projects still form a big part of the work, but other utilities and a variety of other work now form a large proportion of the firm's output.

• **Heads defense work**—One of the biggest Black & Veatch operations now is its defense projects. About 100 of the 400 to 450 employees are engaged on this federal government work. The government operation is still a part of the partnership, but because so much of it is classified, it is housed in a separate office in Kansas City.

Ray Lawrence heads this office. He is the partnership's direct liaison with the government projects and the only one who works regularly in both offices. Other personnel, however, are transferred from one office to the other as work loads shift.

Black & Veatch has designed many water and sewerage projects for the services in both World Wars, but work for the Defense Department and other government entities today is not confined to utilities systems. The firm may undertake foundation, structural and mechanical work, for example, for a missile base or nuclear installation.

• **Had service experience**—Ray's wartime experience stands him in good stead in running the government end of Black & Veatch now. Military duties took up most of his time from 1941 to 1946, first as a civilian in the offices of the Quartermaster General and the Chief of Engineers in Washington and later as a Corps of Engineers officer.

RAY E. LAWRENCE brings 35 years in sanitation to the presidency.

In the Chief of Engineers' office, he served as a member of the utilities contract board and as chief of the engineering division's water supply and sewerage section. In this capacity, he was responsible for initiation of design standards, standard plans and specifications, special water supply and sewerage studies and approval of completed designs for water supply, sewerage and other sanitary engineering facilities for cantonments, ordnance plants and other installations constructed under the wartime program.

Uniformed service followed. In 1944 and 1945, Ray Lawrence served overseas, reaching the rank of colonel under the command of the Chief Engineer in the European Theater of Operations. Duties included the logistical planning of utility construction for the continental invasion and the restoration of utility services to supply the military and civilian populations in France and Germany.

One of his jobs was to ride herd on sanitary engineers passing through headquarters on the way to the field. One of those who passed through, H. D. Hudson, now a partner in the New York City consulting firm of Hazen & Sawyer, recalls Ray Lawrence as an easy-going man who "seemed to get a lot done without making much noise about it." Mr. Hudson says their professional contacts ever since have confirmed his first impression.

• **Power rivals water-sewerage**—Black & Veatch got Ray Lawrence back in 1946, and they had plenty for him to do. Since then he has been responsible for planning and execution of major engineering projects, including a $25-million water supply and sewerage program for Wichita, Kan., and the continuing series of Defense Department and Atomic Energy Commission projects that still take up much of his time.

The firm was busily expanding, too. From a start in the 1930's, power plant design had burgeoned into a major activity for Black & Veatch. Today the volume in this field just about equals the firm's commission in water supply and sewerage. The power work includes not only the design of generating plants but also design of transmission and distribution systems. The company also gets into the design of natural gas systems.

Another major activity of Black & Veatch today is in financial feasibility studies, rate studies, evaluations and appraisals, and financial reports. Some 50 to 70 persons are engaged in this work, and one of the senior partners is a specialist in the field.

A relatively new interest for Black & Veatch is in refuse collection and disposal. They believe they are going beyond anything done yet in this field, according to T. B. Robinson, assistant managing partner, in the extent of their analyses of composition, combustibility, volume and other characteristics of garbage and trash.

• **An old firm**—Black & Veatch as constituted today dates only from 1956, but the partnership has a 45-year history and roots reaching back into the last century. Prior to 1915, the firm was Worley & Black; and the predecessor of Worley & Black was the J. S. Worley Co., which was in business before the turn of the century.

During all these years of growth and expansion, the firm has made a rigid rule of adhering to the letter of the code of professional practice, and regarded its professional integrity as its most valuable asset. Its principals have been leaders in professional activities, and have urged its employees to do like-

No. 1 Job

wise. E. B. Black was president of the American Society of Civil Engineers, and N. T. Veatch is presently a director.

Mr. Black, a past president of ASCE, died in 1949, leaving N. T. Veatch the sole owner. The firm retained that status—still under the Black & Veatch name—until 1956. Then it became a partnership again. The present partnership consists of seven senior partners, including Mr. Veatch as managing partner plus a number of junior partners.

The senior partners, in addition to handling individual projects for the firm, also serve as an advisory and policy-making group. All major decisions affecting the firm are subject to their approval.

Each departmental operation is represented within the group of senior partners. The firm has a civil-sanitary department, which handles water supply, sewerage, drainage, roads, flood studies and miscellaneous civil engineering; a power department, which handles electric power and natural gas projects; a department for the reports, rate studies, etc.; and Ray Lawrence's government projects department.

• **Back to school**—Ray Lawrence's first stay with Black & Veatch didn't last long. After a year with the firm he turned to state and city work. Between 1926 and 1933, he was acting chief engineer for the Kansas State Board of Health for a year, a member of the state engineering staff and an instructor on the civil engineering faculty of Kansas University. In 1933, he left the university to serve as engineer examiner and later as state director in Kansas for the U. S. Public Works Administration.

It wasn't until 1937 that he returned to Black & Veatch. From then until World War II, as a principal engineer, he supervised a number of water supply and sewerage projects for midwestern cities.

Ray is a hard worker in the office and a valuable contact man outside, according to one associate. He makes dozens of speeches every year (probably more now as WPCF president), usually on the subject of water and pollution problems.

He admits to few extra-curricular activities; however, he does take an interest in his alma mater's sports program, Kansas City's Starlight Theater, and a handful of other cultural activities.

Outside professional interests are something else. He has been vice president of the WPCF, chairman of the executive committee of the American Society of Civil Engineers' Sanitary Engineering Division, a member of the board of trustees of the American Sanitary Engineering Inter-Society Board, and a member of the commitee on sanitary engineering and environment of the National Research Council's committee on medical sciences.

Briefs . . .

Public Works

Charles S. Rippan, who has directed Bureau of Reclamation construction work on the North Platte River in Wyoming for the past 14 years, has been appointed assistant director of Region Four of the Bureau at Salt Lake City. He was construction engineer for the Kortes Dam and Power Plant, Alcova Power Plant, Glenda Dam and Power Plant and Gray Reef Dam while in Wyoming.

John F. Mangan has been named area engineer for the Upper Columbia Development office of the Bureau of Reclamation in Spokane. He replaces **Charles S. Hazen,** who recently resigned to enter private employment.

Thomas B. Kuhn has taken a position as chief engineer for the Massachusetts Port Authority. Most recently he was chief of the Airports Division for the Federal Aviation Agency's Division One, which comprises the 15 northeastern states.

Emerson S. Ellett, Denver contractor, has been appointed deputy manager of that city's public works, a position that includes supervision of the city engineering department. He succeeds the late **C. E. Harness.**

John K. Facey, head of the planning section of the Bureau of Reclamation office in Great Falls, Mont., has assumed a new post as senior engineer for the Riverdale County Flood Control and Water Conservation District in California.

O. C. Hopkins, sanitary engineer director of the Public Health Service, has been named deputy chief of the Division of Water Supply and Pollution Control.

William C. Kane has filled the long-vacant post of deputy commissioner of buildings in New York City. First among his new duties will be recruiting engineers for vacant jobs in the recently reorganized Buildings Department.

Hay G. Dewey, Jr. has been appointed temporary chief of the design and construction division of California's Department of Water Resources pending civil service selection of a permanent division head. He succeeds **Walter G. Schulz,** who has resigned.

Associations

Glen W. Moorehouse, senior engineer in charge of scheduling and costs, Project Coordinating Department, Tennessee Eastman Co., Kingsport, Tenn., has been named chairman of the Cost Index Committee by the American Association of Cost Engineers. He is a member also of the Capital Cost Control Committee.

Roger G. Dittig, Jr., former assistant professor of civil engineering and director of sanitary engineering courses at Lehigh University, has been named field representative for the Cast Iron Pipe Research Association for the New England states and Pennsylvania, New York, New Jersey, Delaware and Maryland. His headquarters will be in Bethlehem, Pa.

Arnold L. Henny, president of the Oregon Board of Engineering Examiners, has been elected to serve the National Council of State Boards of Engineering Examiners as president-elect in 1960-61. He will serve as president in 1961-62 without further election.

James P. Thompson has joined the staff of the American Institute of Timber Construction as building code specialist. He had been structural engineer in the Safety Codes Section, Building Technology Division of the National Bureau of Standards.

Ralph W. Smith has been elected president of the Delaware Council of Engineering Societies for 1960-61. He is a field section manager in the Du Pont Co.'s engineering department.

Karl F. Keeler, former supervising engineer for the International Boundary and Water Commission, is the new chief planning engineer for the Board of Water Engineers of Texas.

Francis H. Dutra has been appointed deputy chief of the Rhode Island traffic engineering and highway planning division of the state Public Works Department. He was formerly principal civil engineer in the department.

Claude A. Rothrock, who established the Ohio Highway Department's preliminary engineering section in 1955, will head the new section of urban planning set up by the West Virginia State Road Commission.

Materials Prices

Monthly Market Quotations By ENR Field Reporters

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION—SCORED Per M. lots of 2,000 pieces or over, 3x12x12 In.	4x12x12 In.	8x12x12 In.	STRUCTURAL CLAY TILE—LOAD BEARING—SCORED Per M. lots of 2,000 pieces or over, 8x12x12 In.	10x12x12 In.	12x12x12 In.	BRICK Per M. In quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized
Atlanta	$186.10*pe*	$154.95*pkkr*	$309.90*pe*	$348.65*pe*	.....	.....	$33.20*uu*	$36.70*uu*	$36.50*hhh*	$28.50*hhh*	$28.50*hhh*
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00	41.00	35.80	23.40	.....
Birmingham	135.00*pss*	152.00*pss*	.....	303.00*p*	376.00*p*	465.00*p*	27.00*ff*	38.00*jj*	38.28*mm*	20.87*mm*	26.33*gmm*
Boston	232.00†*mm*	248.00†*mm*	463.25†*mm*	556.00†*mm*	.....	.....	43.50*p*	58.00*p*	42.00*ll*	34.00*ll*	.....
Chicago	137.00*ll*	149.00*ll*	280.00*ll*	.....	.....	.....	32.00	34.00	1.00*llaa*	.90*llaa*	.....
Cincinnati	179.00*mmyy*	190.00*jmmyy*	355.00*jddmm*	390.00*jmmyy*	422.00*jmmyy*	500.00*jmmyy*	48.00*jk*	47.00*jk*	29.10*jmm*	29.10*jmm*	29.10*jmm*
Cleveland	205.00*tt*	219.00*tt*	.....	465.00*tt*	.....	709.00*tt*	43.25*tt*	47.25*ggtt*	32.75*ptt*	28.00*ptt*	.....
Dallas	155.00	155.00	308.00	370.50	452.25	560.00	30.00	50.00	41.80	24.58	28.50
Denver	170.00	185.00	310.00	310.00	390.00	442.00	35.00*xx*	54.00	50.00*p*	44.00*p*	45.00*p*
Detroit	257.00*mm*	274.00*mm*	514.00*mm*	582.00*mm*	767.00*mm*	876.00*mm*	53.50*pmm*	54.00*pmm*	38.00*mm*	30.00*mm*	40.00*mm*
Kansas City	158.00	158.00	312.00	312.00	400.00	500.00	34.00	34.00	36.26	34.26	29.76
Los Angeles	r	r	r	r	r	r	40.00*uu*	.....	38.00*nnll*	38.00*nnll*	39.00*nnll*
Minneapolis	208.00*pe*	225.00*pe*	452.00*pe*	225.00*pwe*	.....	.....	49.00*epe*	57.50*ype*	50.00*bbe*	40.00*bbe*	52.00*bbde*
Montreal	168.78*Ruqoo*	180.93*auqoo*	325.00*auqoo*	220.00*qoo*	400.00*qoo*	.....	48.25*bll*	56.30*bll*	39.00	22.00	13.25
New Orleans	178.00	178.00	371.25	371.25	.....	.....	42.00	55.00	36.00	36.00	32.00
New York	185.00*k*	197.00*k*	294.00*rk*	297.00*kn*	.....	.....	46.00*p*	.....	40.00*p*	38.00*p*	.....
Philadelphia	202.10*ss*	215.60*ss*	404.20*sszz*	485.10*ss*	.....	.....	42.00*mm*	50.00*mm*	40.00*mmp*	21.50	21.50
Pittsburgh	200.00*t*	213.00*t*	400.00*t*	453.00*t*	607.00*t*	693.00*t*	42.00*t*	40.00*t*	30.00*t*	26.00*t*	34.00*t*
St. Louis	180.00*mmpp*	190.00*pp*	385.00*pp*	410.00*ppp*	459.00*pp*	621.50*pp*	44.00*mmpp*	45.50*ppR*	1.00*aapp*	.80*aapp*	1.35*aapp*
San Francisco	156.85†*mm*	177.10†*mm*	235.30*dd*†*mm*	159.40*qqmm*	.....	.....	43.00†*mm*	43.00†*mm*	29.24*mm*	29.24*mm*	31.74*mm*
Seattle	235.00*pt*	270.00*pt*	490.00*pt*	265.00*pwt*	.....	.....	57.00*t*	71.00*t*	52.00*bbt*	38.00*bbt*	4.50*mbbt*
Toronto	169.00*rr*	185.50*rr*	360.00*rr*	281.50*frr*	405.00*rr*	.....	27.00*rr*	65.00*rr*	42.00*mm*	38.00*mm*	36.50*mm*

*‡ F.o.b. yard. *** F.o.b. plant Stockton. *† F.o.b. yard Roxbury. *a Smooth. *b $4.50 del. *c 8 x 12 x 12 In.-8 cell. *d Pulverized hot. *e less 5% disc., 10th. *f 8 x 8 x 12. *g Lumps, $28.72. *h F.o.b. trucks, job site N.Y.C. *i 60 lb sacks. *j Truck load or over. *k $1.00 discount per M, 10 days. *l Red face. *m Per bb 180 lb. processed. *n 7¾ x 7¾ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincial and Municipal tax extra (8%). *r Not used; earthquake danger. *s 8 x 16 x 12. *t less 2% disc., cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12. *x dumped. *y Chi common. *z Pebble; 80 lb sack. *aa 50 lb sack. *bb LCL. *dd 6 x 12 x 12. *ff 80% common. *gg Smooth. *hh less 25¢ disc., cash. *ii F.o.b. plant. *jj rough; smooth: $40. *kk 3½ x 11½ x 11½. *ll less 2% disc. 10th. *mm less 2%, 10 days. *nn F.o.b., L. A. *oo less 2%, 30 days. *pp add 2% sales tax. *qq 8 x 5½ x 11½. *rr 2½% disc., 10 days. *ss 5% disc., 10 days. *tt less 2% disc., 15th. *uu less 50¢/M, 10 days *vv 4000 pcs. and over. *R revised.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD Per 100 lb. In 600 lb. (Approx.) bbl. F.O.B. Plant Dry a C	WHITE LEAD Per 100 lb. In 100 lb. cases In oil	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$13.75*ggJO*	$24.00*ggJ*	$3.59	$3.86	$3.31	$2.90*kk*	$2.25*kk*	$2.85*kk*	$0.67*kk*	$65.35*kk*
Baltimore	17.50*pp*	24.00	3.00	4.40	3.50	3.06	3.67	4.04	.50	54.00
Birmingham	26.00†*J*	29.00†*J*	3.90*J*	3.40*J*	....	2.95†*mm*	2.17*iimm*	3.17*iimm*	.76*ffmm*	48.00*ermm*
Boston	24.95†*oomm*	26.90†*mmm*	....	....	....	3.30*g*	2.45*g*	2.79*g*	.55*g*	58.00*g*
Chicago	15.25*rJqqpp*	24.00†*J*	....	....	....	3.45*ukk*	2.35*okk*	3.00*okk*	48.00*bbkk*	57.70†*kk*
Cincinnati	15.25†*JO*	24.00†*J*	....	....	....	2.74*mm*	2.02*mm*	2.42*mm*	.53*ymm*	55.96*Hmm*
Cleveland	25.65†	26.90†	2.63*ggP*	2.82*ssqq*	3.43*qqq*	2.60*q*	1.78*o*	2.35*o*	.39*y*	49.00*qq*
Dallas	22.50	23.50*M*	....	3.25*B*	....	3.00*u*	3.00*o*	3.00*o*	.470	66.00*hh*
Denver	23.85*n*	24.00	3.70	5.10	3.70	2.71	1.93*o*	2.80*o*	.50*ff*	50.00
Detroit	15.75*r*	24.00*rr*	2.70*mm*	3.95*mm*	2.70*mm*	2.82*mm*	1.81*ommll*	2.23*ommll*	.56*ffmm*	49.00*mm*
Kansas City	26.90*lqqoo*	25.65	3.99	3.43	3.01	3.00*mm*	2.50*mm*	2.50*mm*	.55*y*	.....
Los Angeles	16.25*yy*	22.00	3.30*n*	4.50*n*	4.20*n*	3.40*nkk*	2.40*niikk*	*l*	.75*nykk*	*l*
Minneapolis	17.25*N*	21.50*kk*	....	....	....	2.50*kk*	1.45*hikk*	2.36*hikk*	.52*ikk*	50.00*rkk*
Montreal	19.45*O*	26.00*wtt*	5.52*Dff*	6.55*xff*	5.10*kff*	5.40	4.65*f*	4.65*f*	1.60	4.40*uu*
New Orleans	23.00*Jpp*	24.00*J*	....	....	....	2.78	1.98	2.85	.680	45.50
New York	15.75*ooO*	29.75	....	....	....	2.79*zz*	1.91*zzo*	2.46*o*	.52*s*	49.00*
Philadelphia	16.25*Omm*	24.75mm	3.35*mm*	3.90*mm*	2.65*Rmm*	4.70	3.60	2.85	.515	50.00
Pittsburgh	21.00*mggJ*	24.00*J*	2.20*HEJ*	2.25*HFJ*	2.25*HGJ*	2.90*nH*	2.15*nH*	2.15*H*	.56*H*	55.00*H*
St. Louis *K*	25.65†*m*	26.90	....	....	....	3.25*iimm*	2.37*hhK*	2.84*hhK*	.48*yK*	62.00*K*
San Francisco	26.70*mm*	26.90*mm*	3.20*mm*	4.30*mm*	3.50*mm*	2.87*mm*	1.72*aaiimm*	2.59*mm*	.46*ff*	54.00
Seattle	13.35*HO*	24.00*H*	....	4.19*ceffJ*	....	3.70*qccH*	3.06*kccH*	....	.59*cc*	....
Toronto	14.45	20.65	5.15*J*	6.18*J*	5.95*J*	3.25	2.75*aae*	2.75*e*	.91*j*	56.00*A*

*† Delivered. * Note: Red lead in oil 50% higher than white lead in oil. ** Aver. wt. approx. 425 to 550 lb drums. *a Red lead prices change frequently due to pig lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D256-31. *d 80% minimum ferric oxide. *e Per 108 sf roll. *f Per 432 sq ft. *g F.o.b. yard Roxbury. *h Per roll, 65 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers. *k Over 80% ferric oxide. *l Not used. *m 100 lb. keg. *n F.o.b. city. *o Per 60 lb roll. *p 6-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *x Ready-mixed. *y 55-gal container. *z Drums. *aa 16 lb. *bb Roofers coating and cement. *cc LCL, truck delivery. *ee Asphalt pitch in 100 lb package. *ff 5-ga drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per 324 sf roll. *jj Asbestos roof coating. *kk less 2% disc., 10th. *mm less 2% disc., 10 days. *oo 100 lb bbls. *pp 50 or 100 lb bags. *qq 500 lbs or more *rr F.o.b. plant, Detroit. *ss 50 lb bbls. *tt 25 lb kegs. *uu 250 lb bbls. *xx Sept.: Rolls revised to $2.75, Asph. Felt revised to 1.71. *vv Sept. revised to $12.00. * zz Sept. revised to $2.80. *A 400 lb barrels. *B ASTM Spec. D962-49. *C 95%. *D Std. black. *E Milt. spec.: E TTP27; F TTY81; G TTP31. *H less 2% disc., cash. *I Per 100 lb. *J less 10% disc., 10 days. *K add 2% sales tax. *L CL. *M 1 ton or more. *N under 500 lbs. *O 50 lb. bag.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡ Neat per ton	PLASTER‡ Gauging per ton	VERMICULITE‡ Home Insulation pellets	VERMICULITE‡ Plaster aggregate	VERMICULITE‡ Concrete Aggregate Untreated	PERLITE‡ Plaster Aggregate	PERLITE‡ Concrete Aggregate Untreated	ALUMINUM SHEET† Flat .100" th 36"x108" & 48"x144" per lb*jt*	Corr roof .032" th 35"x12' per shu	STAINLESS STEEL† SHEET-TYPE 302*p* 20 ga 48"x96"-120" per cwthb	28 ga 36"x120" per cwtmm	COPPER WATER* TUBING-TYPE L 2000 ft lots per ft ½"b	½"c
			per bag of 4 cu ft										
Atlanta	$32.00*ss*	$42.00*ss*	$1.55*ass*	$1.65*ass*	$1.80*alss*	$1.65*ss*	$1.65*ss*	$0.463*noo*	$27.17*nY*	$65.68*nzz*	$74.43*nzz*	$0.1762*ss*	$0.2464*ss*
Baltimore	24.00	35.70	0.95	1.15	1.15	1.15	1.55	0.462	0.451*r*	63.00	71.25	0.16	0.23
Birmingham	37.00*ss*	43.00*ss*	1.55*ss*	1.55*ss*	1.60*lss*	1.27*ss*	1.27*lss*	0.455*M*	9.62*K*	65.54*K*	73.79*K*	0.20*ss*	0.27*ss*
Boston	24.00	30.00	1.40	1.40	1.40	1.55*ss*	1.55*ss*	0.485	24.66*pAA*	64.42dd*zz*	72.67*dd*	0.1762*ss*	0.2464*ss*
Chicago	1.45*bbtt*	1.45*bbtt*	1.55	1.60	1.60*l*	1.60	1.60	0.564*z*	33.43*p*	64.15*ee*	72.40*ee*	0.1723	0.2418
Cincinnati	23.85*ss*	23.85*ss*	1.75*ss*	1.75*ss*	1.85*ss*	1.85*ss*	1.90*ss*	0.514	9.21	65.30*zz*	74.05*zz*	0.1814*ss*	0.2545*ss*
Cleveland	28.00*N*	45.00*N*	1.14*ss*	1.16*ss*	1.24*lss*	1.45*ss*	1.45*ss*	0.455*aa*	8.48	63.33*oozz*	71.58*oozz*	0.1723	0.2418
Dallas	30.65	30.65	1.05	1.21	1.37	1.21	1.32	0.463	0.461*r*	64.09	72.34	0.1668	0.1986
Denver	27.00	27.00	1.50	1.40	1.50	1.50*ss*	1.60*ss*	0.475	10.89	65.32*gg*	73.57*gg*	0.1772	0.2380
Detroit	28.00*ss*	28.00*ss*	1.27*ss*	1.31*ss*	1.40*ss*	1.45*kll*	1.50*kll*	0.475*a*	10.35*a*	63.00*zzz**	71.25*zzz**	0.2058	0.2887
Kansas City	30.00	35.00	1.19*E*	1.21*E*	1.29*lE*	1.21	.....	0.463	24.66*aqvvp*	67.50*E*	76.25*E*	0.1404	0.1971
Los Angeles	27.00*tt*	28.00*tt*	1.25*ktt*	1.20*ktt*	1.45*tt*	1.11	1.11	0.459	9.77*Z*	65.02	73.27	0.1814	0.2545
Minneapolis	35.00*F*	35.00*F*	1.65*tt*	1.80*F*	1.95*F*	1.40*S*	1.50*S*	0.485	16 23	63.61*GR*	69.61*ffG*	0.1814	0.2545
Montreal	27.60*k*	35.60*k*	1.25*k*	1.40*k*	1.60*k*	1.15*s*	1.15*s*	43.95*AH*	12 10*H*	65.75*H*	.....	0.1978	0.2089
New Orleans	34.00	48.00	1.25*P*	1.35*P*	1.45*P*	1.15*P*	1.15*P*	0.463	32 88	61.24*Y*	72.00*Y*	0.2058	0.2887
New York	27.00	35.00	1.40	1.35	1.40	1.35	1.40	0.489*aT*	0.2507*aXAA*	64.08*a*	72.33*a*	0.1670	0.2345
Philadelphia	26.50	31.00*ss*	1.40*ss*	1.40*ss*	1.55*lss*	1.35*ss*	1.35*qqss*	0.485	9.46	63.71	71.96	0.1814	0.2545
Pittsburgh	30.00*nn*	31.00*nn*	1.25*nn*	1.30*nn*	1.40*mm*	1.40*nn*	1.40*nn*	0.475	10.39	63.00	74.50*pp*	0.1800	0.1800
St. Louis *uu*	30.00*uu*	42.00*uu*	1.50*uu*	1.60*uu*	1.65*uu*	1.50*uu*	1.60*uuY*	0.479	8.77	63.39*Kmmgg*	69.39*yuugg*	0.1723*fmss*	0.2418*fmss*
San Francisco	29.50*ss*	30.50*ss*	1.38*ss*	1.38*ss*	1.50*ss*	1.38*ooss*	1.58*ooss*	0.575	10.83	65.00*K*	77.25*K*	0.1723	0.2418
Seattle	42.40*nn*	45.60*nn*	1.55*nn*	1.35*knn*	1.85*lnn*	1.50*k*	.....	0.50*D*	10.75*D*	54.02*D*	73.27*D*	0.1756	0.2460
Toronto	.82	1.31	1.45	1.48	1.75	1.20*Q*	.....	0.4295	26.00*ap*	73.74	86.52	0.3063	0.3418

‡truckiots, delivered †fob warehouse *fob city *a delivered *b ½" O.D. *c ¾" O.D. *d per sf *e 34" x 60" sheet *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled 2B finish *h incl. Federal tax *i add 25¢ for pint of additive *j 1100 & 3003 alloy, mill finish *k bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob mill fr equalized with nearest stocking competitor *o 250 sacks or more *p 100 sq ft *r per lb *s 30 lb bag *t 38" x 108";-10.81 lb/sh; 48" x 144"; 21.7 lb/sh *u 19.31 lb/sh *v f.o.b plant *w 48" x 144" *x 0.11"/sh *y 27 gauge *aa 16M lb & up *bb Per 50 lb bag *dd add $1.00 cwt boxing *ee 4 tons & up *gg add $2/cwt boxing; $0.75/cwt on skids *hh Theoretical wt for 48" x 96"; 60.4-lb. per sh *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt; 19.7-lb per sh *nn 2% cash *oo skid packed *pp type 304 *qq Philadelphia and suburbs. *rr less 2% disc. 15 days. *ss less 2% disc. 10 days. *tt less 2% disc. 10th. *uu add 2% sales tax. *vv Type N. *xx less ½% disc. 10 days. *yy .021 ga. *zz .061" th. *A Per 100 lb. *C 15M lb. *D less ½% for cash. *E Quantity differential. *F less 5% disc. 10th. *G less ½% disc. 10th. *H Fed. tax exempt. *K less ½%, 10 days. *L 5% disc. 30 days. *M 3003: .452 for 1100. *N less 2%, 15th mo. *O less $2, cash & carry. *P less 2%, 15 days. *Q per ton. *R revised *S add .10/bag under 200 bags. *T 5000# quantity on 4000# skids. *U 30 Msf quantity; $0.245 in 10 Msf quantity. *X per sq ft. *Y Per sheet. *Z 6,000 lb or over. *AA 30,000 sf or over.

Labor and Materials Prices — Monthly Market Quotations by ENR Field Reporters

HOURLY WAGE RATES—Base rate + fringe benefits

	Common Labor: Building	Common Labor: Heavy Const	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$2.00	$2.00	$4.00	$3.35	$3.60+7½¢	$3.675	$3.50+3¢	$4.00+5¢ *B*	$3.85+22½¢	$2.10	$2.20	$2.45 *B*
Baltimore	2.27+7½¢	2.27+7½¢	4.10+15¢	3.60+7½¢ *f*	4.00+178¢	3.35/4.05+10¢ *A*	3.85+13¢	3.85+7½¢	3.84+175	2.20+15¢	2.20+15¢	2.20+15¢
Birmingham	1.95	2.05	4.05	3.23	3.65+10¢ *mn*	3.30	3.37	3.65	3.70+12¢ *p*	2.00+7½¢	2.20+7½¢	2.45
Boston	2.75+10¢	2.55+10¢	4.05+30¢	3.65+10¢	4.14+20¢ *c*	4.05+20¢	3.80+45¢	4.10+25¢	3.95+27¢	2.70+23¢	2.70+23¢	2.70+23¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.225+10¢	3.91+20¢ *o*	4.35+16¢ *n*	3.90+5¢	4.00+27¢	4.30	4.10+25¢	2.58+175¢	.....	.....
Cincinnati	2.90	2.80	4.025+12¢	3.90 *D*	3.95+10¢	3.575/3.80 *A*	3.875+.01	4.09+.511	4.10+9½¢	2.65+62½¢	2.70+6½¢	2.75+6½¢
Cleveland	3.37 *b*	3.285 *b*	4.11 *b*	4.11 *b*	4.01+10¢ *b*	4.11 *b*	4.11 *a*	4.17 *b*	3.91+20¢ *b*	2.92+15¢ *a*	2.92+15¢ *a*	2.92+15¢ *a*
Dallas	1.85	1.85	4.10	3.45 *b*	3.55+7½¢	3.50 *B*	3.75+13¢	3.625+7½¢	3.70+8½¢	1.80/2.625	1.80/2.625	1.80/2.625
Denver	2.32	2.32	4.00	3.60	3.66+10¢	3.25	3.75+12¢	4.05+47¢	3.95+10¢	2.40/2.60 *B*	2.75 *B*	2.90 *B*
Detroit	2.90+34¢	2.90+34¢	3.98+33¢	3.63+46¢	4.00+27½¢	3.63+39½¢	3.75+38¢	4.00+52	3.90+49¢	3.03+175¢	3.03+175¢	3.03+175¢
Kansas City	2.58	2.63	4.075	3.625	3.775	3.57	3.875	3.90+42.7¢	3.80+9½¢	2.555	2.555	2.63
Los Angeles	3.08+10¢	3.08+10¢	4.20+25¢	3.825+20¢	4.27½+25½¢	3.81+20¢	4.25+42½¢	4.65+46	4.33+64¢	3.365+10¢	3.365+10¢	3.555+10¢
Minneapolis	2.85	2.85	3.875+15	3.50	3.62	3.60	3.60+33¢	3.70+44¢	3.62+35¢ *B*	2.85	2.85¢	3.00
New Orleans	1.87½¢	1.87½¢	3.67½+7½¢ *d*	3.25¢	3.55+10¢ *d*	3.375+7½¢ *d*	3.27+5¢ *jk*	3.90+7½¢	3.70+7½¢ *dl*	3.375+7½¢ *d*	3.375+7½¢ *d*	3.375+7½¢ *d*
New York	3.45+28¢ *c*	3.45+28¢ *c*	4.80+60¢	4.55+36¢ *k*	4.60+65¢ *j*	4.80+38¢	4.70+67¢	4.15+1.25 *B*	4.65+61¢	2.35+26½¢	3.40+28½¢	3.40+28½¢
Philadelphia	2.55+10¢	2.60+15¢	4.25+17¢	3.885+10¢	4.30+23¢	3.935/4.215+10¢ *A*	4.15+20¢	4.37½+16¢	4.20+31½¢	2.45+15	2.45+15½¢	2.45+15
Pittsburgh	2.725+20¢	2.55+20¢	4.45+20¢	3.975+20¢	4.30+20¢	3.73+20¢	4.225+20¢	4.60+34½¢	4.15+20¢	2.59+20¢	2.635+20¢	2.735+20¢
St. Louis	2.875+10¢	2.875+10¢	4.05+32½¢	3.825+10¢ *c*	3.85+7½¢	3.95	4.00+07½¢	4.11+50¢	4.27½+25½¢	2.90+15¢	3.10+15¢	3.20+15¢
San Francisco	3.045+10¢	3.045+10¢	4.40+42½¢	3.725+38¢	4.275+25¢	3.80+28¢	3.79+63¢	4.22+29¢	4.36+72¢	3.19+11¢	3.27+11¢	3.08+11¢
Seattle	3.00	3.00	4.15+30¢	3.38+20¢	3.76+10¢	3.84+20¢	3.72+30¢	3.95+27¢	3.89+28¢	3.40+20¢	3.40+20¢	3.60+20¢
Montreal	1.75+4¢ *q*	1.75+4¢ *q*	2.55+6¢ *q*	2.35+5¢ *q*	2.55+6¢	2.35+5¢	2.65+6¢	2.45+5¢	2.62+6¢ *s*	1.75+4¢	1.75+4¢	1.75+4¢
Toronto	2.00+8¢	2.00+8¢	3.15+13¢	2.90+12¢	3.05+12¢	3.15+13¢	3.20+21¢	3.52+14¢	3.47+13¢	2.05+15¢	2.05+15¢	2.05+15¢

	Tractor Operators Incl. bulldozers: 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-18 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$3.15	$3.15	$3.15	$3.15	$3.675	$3.675	$3.15	$2.825 *B*	$2.22
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.85+10¢	3.25+10¢	2.325+7½¢
Birmingham	3.30	3.30	3.30	3.30	3.30	3.30	3.30	2.89	2.15
Boston	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.90+20¢	3.90+20¢	3.52½+20¢	3.45+20¢	2.80+10¢
Chicago	3.65+5¢	3.80+5¢	3.70+5¢	3.70+5¢	4.25+5¢	4.25+5¢	3.70+5¢	3.55+5¢	3.85+5¢
Cincinnati	3.575+10¢	3.575+10¢	3.575+10¢	3.575+10¢	3.575+10¢	3.80+10¢	3.80+10¢	3.80+10¢	3.80+10¢
Cleveland	3.86 *b*	3.86 *b*	3.86 *b*	3.86 *b*	4.11 *b*	4.11 *b*	3.86 *b*	3.735 *b*	3.735 *b*
Dallas	1.80/2.625	1.80/2.625	1.80/2.625	1.80/2.625	3.225 *h*	3.225 *h*	1.80/2.625	2.00	2.00
Denver	2.50	3.10	3.10	3.10	3.25	3.25	3.10	3.10	2.60
Detroit	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39.5¢	3.03+34¢
Kansas City	2.875	3.325	3.325	3.325	3.57	3.57	3.325	3.325	2.675
Los Angeles	4.11+20¢	4.11+20¢	4.11+20¢	4.21+20¢	4.21+20¢	4.21+20¢	4.21+20¢	4.33+20¢	3.29+10¢
Minneapolis	3.23	3.45		3.45	3.67	3.93+10¢	3.23	3.12	3.00
New Orleans	3.375+7½¢ *d*	3.375+7½¢ *d*	3.375+7½¢ *d*	3.375+7½¢ *d*	3.375+7½¢ *d*	3.375+7½¢ *d*	3.375+7½¢ *d*	2.70+7½¢ *d*	1.975
New York	4.175+33¢	4.175+33¢	4.175+33¢	4.30+34¢	5.05+40¢	5.05+40¢ *k*	4.30+34¢	4.30+34¢ *B*	3.90+.195¢ *B*
Philadelphia	3.63+10	3.775+10	3.775+10	3.90+10	4.345+10	4.345+10	3.765+10	3.51+10	2.40/2.50+10¢
Pittsburgh	3.72+20¢	3.72+20¢	3.72+20¢	3.72+20¢	3.92+20¢	3.92+20¢	3.92+20¢	3.43+20¢	2.60+20¢
St. Louis	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.40	3.40
San Francisco	4.01+28¢	4.01+28¢	4.01+28¢	4.14+28¢	4.31+28¢	4.31+28¢	4.21+28¢	3.48+28¢	3.475+10¢
Seattle	3.81+20¢	3.81+20¢	3.81+20¢	3.81+20¢	4.18+20¢	4.18+20¢	3.90+20¢	3.54+20¢	3.20+10¢
Montreal	1.95+4¢ *q*	2.18+5¢	2.18+5¢	2.18+5¢	2.45+5¢	2.45+5¢	2.18+5¢	2.05+5¢	2.05+5¢
Toronto	2.40+10¢	2.50+10¢	2.50+10¢	2.50+10¢	3.00+12¢	3.15+12¢	2.80+11¢	2.50+10¢	2.50+10¢

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.080, ENR Common Labor Average $2.734

Description of fringe benefits last appeared Sept. 17 1959. *A 1-2 drum. *B revised *C eff 7/1/60

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Gypsum Plaster Board tapered edge per Msq ft ½"	Gypsum Plaster Board tapered edge per Msq ft ⅝"	Gypsum Board Lath plain or perf per Msq ft ⅜" x 16" x 48"	Gypsum Sheathing tongue & groove per Msq ft ½" x 2' x 8'	Fiber Board Sheathing asph impreg & coat per Msq ft ½" sq ed	Fiber Board Sheathing asph impreg & coat per Msq ft ½" T&G	Fiber Board Insulation sq edge, paint per Msq ft ½"	Mineral Wool Insulation loose, per 40-lb bag a	Mineral Wool Insulation 3" batts per M sf	Glass Fiber Insulation loose, per 40-lb bag a	Glass Fiber Insulation 3" batts per M sf	Aluminum Foil 60¢ Kraft 1 side foil per roll of 250 s. f.	Aluminum Foil Expansible Blanket 2 layers foil per Msq ft
Atlanta	$65.00 *F*	$55.00 *F*	$42.50 *F*	$68.00 *F*	$72.00 *F*	$127.00 *F*	$75.00 *F*	1.50 *z*	$70.00 *F*	$2.00	$80.00 *F*	$4.77 *qi*	
Baltimore	54.00	47.50	35.75	55.70	65.00	108.50	69.00	1.40 *F*	67.50 *F*	1.60 *F*	47.00 *F*	4.00 *F*	$33.50 *F*
Birmingham	68.90 *H*	57.00 *H*	47.77 *H*	75.00 *H*	67.50 *H*	140.50 *H*	83.50 *H*	1.40	70.00	2.00	65.00	3.77 *gG*	
Boston	60.00 *mH*	50.00 *mH*	35.00 *mH*	55.00 *mH*	65.00 *H*	120.00 *H*	79.00 *knH*	1.40 *bH*	75.00 *H*	.....	75.00 *H*	5.30 *zHS*	53.50 *qH*
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.85	80.00	.....	63/65 †	5.25 *j*	
Cincinnati	52.50 *wH*	42.85 *wH*	33.05 *wH*	51.16 *wH*	77.00 *wH*	125.00 *wH*	72.50 *wH*	1.45 *wH*	62.50 *wH*	1.45 *wH*	62.50 *wH*	2.85 *jwJ*	50.00 *wJ*
Cleveland	62.00 *CF*	56.50 *CF*	41.50 *CF*	65.00 *CF*	80.00 *CF*	129.00 *CF*	80.00 *CF*	1.35	75/80 *H*	.....	67.00	14.00 *ioJ*	55.00 *J*
Dallas	56.25	46.85	42.50	56.25	68.75	118.00	68.75	2.00	65.89	1.45	70.67	5.00 *gAG*	45.00
Denver	62.50 *H*	51.50 *H*	43.00 *H*	67.00 *H*	62.50 *H*	103.50 *H*	77.00	1.55 *b*	65.00 *wb*	2.00 *b*	65.00 *a*	5.25	48.65
Detroit	66.00 *K*	56.00 *K*	42.45 *K*	66.00 *K*	48.50 *DK*	85.65 *DK*	62.50 *DK*	1.30 *b*	52.00	1.85 *b*	80.00	.....	.....
Kansas City	72.00 *H*	62.00 *H*	45.00 *H*	.....	75.00 *H*	122.00 *H*	80.00 *H*	1.40 *H*	75.00 *H*	1.80 *H*	75.00 *H*	3.60 *d*	60.00
Los Angeles	66.00 *F*	60.50 *F*	0.33 *xF*	64.50 *F*	75.00 *F*	125.00 *F*	80.00 *F*	78.00 *BeF*	83.00 *F*	1.35 *s*	64.00	4.40 *g*	7.45 *V*
Minneapolis	75.00 *F*	65.00 *F*	0.41 *xL*	75.00 *F*	95.00 *F*	130.00 *F*	78.00 *F*	2.25 *yF*	80.00 *F*	2.10 *F*	80.00 *F*	4.25 *F*	.....
Montreal	58.00 *M*	49.30 *M*	37/41.50 *M*	53.00 *M*	64.75 *M*	.....	58.50 *M*	1.50 *M*	66.00 *M*	1.50 *M*	66.00 *M*	9.00 *qM*	56.00 *M*
New Orleans	57.00 *H*	52.00 *H*	45.00 *H*	60.00 *H*	67.00 *H*	140.00 *H*	80.00 *H*	3.00 *L*	70.00 *	.....	.....	.....	62.50 *U*
New York	65.00 *H*	55.00 *H*	42.50 *H*	60.00 *H*	78.00	124.00	78.00	1.55 *b*	68.50 *k*	.....	.....	4.38 *iH*	40.00 *eH*
Philadelphia	*H* 53.00	46.00	37.50	53.50	70.00	120.00	70.00	1.35	50.00	1.40	50.00	3.85	83.50
Pittsburgh	74.00 *K*	65.00 *K*	40.00 *K*	63.00 *K*	60.00 *K*	100.00 *K*	60.00 *K*	1.25 *sK*	55.00 *K*	1.25 *sK*	55.00 *K*	4.25 *iqK*	38.50 *K*
St. Louis	55-65.00 *HO*	50-55.00 *HO*	40.00 *HO*	65.00 *HO*	70.00 *HO*	115/120 *HO*	75/80.00 *HO*	125/135	65-75 *HO*	2.00 *PHO*	74.00 *HO*	4.50 *iqHO*	.....
San Francisco	60.00 *F*	49.00 *F*	0.36 *xF*	61.00 *F*	70.00 *F*	111.00 *F*	69.00 *F*	1.75 *F*	66.50 *F*	1.75 *F*	66.50 *F*	5.10	60.00 *F*
Seattle	68.00 *K*	58.50 *K*	51.50 *K*	65.50 *K*	65.00 *K*	125.00 *K*	71.00 *K*	1.15 *tK*	58.00 *K*	1.90 **pK*	51.00 **IKA*	4.25 *K*	46.50 *EK*
Toronto	58.00	50.00	50.00 *L*	67.50	79.00 *T*	.....	88.00 *T*	1.85	72.00	.....	72.00	15.00 *o*	46.00

** F.o.b. warehouse. *a Semi thick. *b 30# bag. *c 3 layers of foil: $54.50. *d 40# kraft paper, 5 Msf, 100/500 rolls. *e 20# sq ft bag, 4" thick. *f Full trailer loads. *g 80# kraft paper backing 400 rolls or over. *h LCL. *i 40#. *j 80#. *k 2-in. *l 2". *m 8 to 10 ton quantities. *n Distributor's siding. *o Per Msf roll. *p 32# bag. *q 500 sf. *s 35# bag. *t 26# bag *u Flame proof $75. *v 5000 sf quantity. *w F.o.b. city. *x Sq. yd. *y 30# bag. *z Spun rock wool. *A 650 sf. *B ton. *C F.o.b. plant, freight allowed. *D CL. *E 10 Msf. *F less 2% disc, 10th. *G ½ of 1%, 10 days. *H 2% disc, 10 days. *J 1% disc, 10 days. *K less 2% for cash. *L 5% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales ax. *P 50 lb. bags, *Q add 4% sales tax. *R revised. *S 45 lb. *T less 2%, 30 days. *U lots of 2606 sq. ft. *V 250 sf roll.

MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos) *a	Sep. '60
Common labor, building (peons)	101.50
heavy const (peons)	136.50
Skilled labor; carpenters 1 cl	210.00
bricklayers 1 cl	245.00
struct. ironworkers	315.00

*a 6 days work-extra day's pay

MATERIALS PRICES, F.o.b. City (pesos)	Sep. '60
Struct. steel shapes, fob Monterey	
I-beams, 3 x 3 x 4" ..... per metric ton	1945.00
Reinf. steel, corrugated rods, per ton	
⅜"-1½" x 11 meters consolidada.	1950.00
¾"-1" x 11 meters	1850.00

	Sep. '60
Gravel, truckload; per cu meter	
Blue gravel	30.00
Cement, std. port. (Tolteca) ..... per metric ton	280.00
Lumber, 2" x 4" 1st class pine 20 ft. ... per M sq. ft.	2700.00
2" x 4" 2nd class pine ..... per M sq. ft.	2300.00

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics. E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 5 Maine

STREETS AND ROADS

October 4 Massachusetts

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, **Bayer & Mingolla Constr. Co., Inc.,** P. O. Box 991, Worcester, Mass CA **$2,734,496,** hy. and bridge. 1-495-6(16)-57, Little and Westford. Bids July 19, awarded Sept. 14, CD 7/21, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Uashua St., Boston, Mass.—**Campanella & Cardi Constr. Co.,** 780 Jefferson Blvd., Warwick, R. I., CA **$3,767,531,** est. $4,-158,758 constr. section Lowell Connector. U-358(7), Lowell, Awarded Sept. 14, CD 6/30, under LB.

Mass.—**G. Rotundi & Sons, Inc.,** 2 Washington St., Melrose, Mass., CA **$2,872,843,** est. $3,050,284, wid'n section Rte. 128.U 272(45) Lexington and Waltham. Awarded Sept. 14, CD 7/1 under LB.

BUILDINGS—LB & CA

▲ **Aberthaw Constr. Co.,** 60 State St., Boston, Mass., CA Approx. **$4,000,000,** COMPUTER BLDG., OFFICE and BOILER ROOM, BEDFORD, MASS. Mitre Corp.-L. G. Hanscom Field, c/o U. S. Eng., 424 Trapelo Rd., Waltham, Mass. CD 7/29.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

Octover 11 Maryland October 14 Pennsylvania

STREETS AND ROADS

October 4 Maryland October 14 Pennsylvania

BUILDINGS—BA

▲ **N. Y., Levittown**—SCHOOL, etc.—BA 10/11—Diocesan Bldg. Comn., 253 Sunrise Hy., Rockville Centre, N. Y., St. Bernard's School and Auditorium. $2,500,-000. W. Thomas Schaardt, 2099 Bellmore Ave., Bellmore, archt. V. L. Falotico & Assocs., 26 Court St., Brooklyn Zone 1, mechanical engrs. Thompson & Clark, 2364 Hempstead Turnpike, East Meadow, structural engrs.

▲ **N. J., Newark**—SCHOOL—BA 10/15—Diocese of Newark, 33 Mulberry St., elementary school for Parish Sacred Heart, Hazelwood Ave. $2,500,000. Emil Schmidlin, 50 Evergreen Pl., East Orange, archt. CD 3/16.

▲† **D. C., Wash.**—FEDERAL OFFICE—BA 11/3—General Services Admin., 19 and F Sts. N. W., Federal Office Building No. 8, Food and Drug Administration Bldg., 2, 3 and D Sts. S. W. $15,105,000. Plans deposit $150. Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, Wash., archts.; adv. ENR 9/29. CD 9/19.

▲ **N. Y., New York**—BUILDING ADDN.—BA 11/4—New York Telephone Co., 140 West St., Zone 7, 6 story, 60,000 sq. ft. E. 56 St. bldg. addn., between 2 and 3 Aves. $2,500,000. Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., Zone 17, archts.

BUILDINGS—SLC

▲ **N. Y., New York**—TELEPHONE EXCHANGE, etc.—New York Telephone Co., 140 West St., Zone 7, soon lets contract foundation and substructure for 21 story Telephone Exchange and Office. 789-813 Tenth Ave. Total cost $13,000,000. CD 3/24.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 9/21,

N. Y.—U. S. Steel Corp., 71 B'way, N. Y. City. LB **$4,697,005.06,** est. $5,639,000 (6 bidders) Alexander Hamilton Bridge superstructure, 0.29 mi., Interst. Rte. Conn. 511; Cross Bronx Expressway Cont. LB, proj. I-95-1(40), New York and Bronx Counties. CD 9/21 under Rds. & Sts.

N. Y.—**Landscaping By County Gardens Inc.,** R. F. D. 2, Old South Path, Huntington, N. Y. LB **$234,856,-000** (7 bidders), roadside development, total 72, Int. Rte., Conn. 513, Clearview Expressway (73rd. Ave. to Willets Point Blvd.); Int. Rte. Conn., 514 Horace Harding Expressway, Sec. 2 (190th. St. to Oceania St.), Proj. I-78-1(52); I-495-1(43), Queens Co. CD 8/19.

▲ **New York**—State Dpt. P. Wks., State Office Bldg., Albany, bids opened 9/21,

▲ **Peter Kiewit Sons Co.,** P. O. Box 224, East Wood Sta., Syracuse 6, N. Y. LB **$7,533,877.70,** est. $9,-762,000 (12 bidders), 7.89 mi. of interstate hywy. from Malta to Rt. 9-P.

N. Y.—**County Asphalt,** 129 Main St., Tarrytown, N. Y. LB **$2,165,588.50,** est. $2,895,000 (9 bidders) b. conc. Type 1A,5.79 mi., misc. work-0.02 mi., 1 hgs prestressed conc. beam, 7 spans, total 370.0 ft., Int. Rte. 502, Sect. 7D-1, Miner Farm Rd. to Ridge Rd., Proj. I-87-4(8), Clinton Co.

N. Y.—**John C. Piterson Constr. Corp.,** 958 Church St., Baldwin, N. Y. LB **$1,918,021.75,** est. $2,771,000 (8 bidders) asph. conc., 1.99 mi., misc. work, 0.36 mi., total 2.35 mi., Jericho Turnpike Pt. 1, Jamaica Ave., SH 1831; Jericho Turnpike Pt. 2, Jamaica Ave., SH 1940; Jericho Turnpike, SH 9020; Jericho Turnpike-Floral Park Vill. SH 60-20, Proj. U-1000(7), Nassau and Queens Counties,

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg. Albany,

reiected bids July 28, b. conc., 7.63 mi., (.0.57 acc.) bridge, rein.-con. box 20.8 ft. sq.; RR grade sq.-N.Y.C. RR prestressed beam 3 spans 139.4 ft. WCS comp., I-beam 4 spans 200.2 ft. Billings-Poughquag SH 8525 Stonehouse-Stormville, SH 1162; Stone-house-Pawling SH 1677; Pawling-Patterson, SH 343; Pawling Village, SH 6009, Rtes., 22 and 55; FARC 60-110, Proj. F-102S(3); F-625(5) and F-FG-625(5); F-350(23), Dutchess Co. LB **$3,328,959.** CD 8/4, under LB.

BUILDINGS—LB & CA

▲ **Mountaintop Lands, Ltd.,** c/o Herman Dranoff, 161 William St., New York 38, N. Y., Owner Builds, **$2,500,000,** Mount Beacon INN and RECREATION CENTER, 2 ski slopes, outdoor theatres, 17 acres, BEACON, N. Y. Morris Lapidus, Kornblath, Harle & Liebman, 139 E. 56 St., New York 22, N. Y., archts. Bressman & Morgan, 118 E. 28 St., New York 16, N. Y., mechanical engrs. James Ruderman, 32 Union Sq., New York 3, N. Y., structural engrs.

▲ **Caristo Constr. Corp.** 26 Court St., Brooklyn 1, N. Y., LB **$3,774,000** (4 bidders) general contract combination PUBLIC SCHOOL 282, 6 Ave. between Berkeley Pl. and Lincoln and JUNIOR HIGH SCHOOL 294, DeKalb Ave. between Carlton Ave. and Adelphi St., LB **$1,397,000** (4 bidders) general contract PUBLIC SCHOOL 282; LB **$2,387,000** (4 bidders) general contract JUNIOR HIGH SCHOOL 294, BROOKLYN, N. Y. Supt. Design, Constr. and Physical Plant Bureau of Constr., 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 21. CD 8/29.

D. J. Rice, Inc., 41-50 38 St., Long Island City 1, N. Y., LB **$628,125** heating and ventilating combination P. S. 282 and JUNIOR HIGH SCHOOL 294 (Brooklyn, N. Y.).

Benjamin Hochman Elec. Co. Inc., Beach 106 St., Rockaway Beach, N. Y., LB **$490,000** (10 bidders) electrical work, combination P. S. 282 and JUNIOR HIGH SCHOOL 294 (Brooklyn, N. Y.).

▲ **Leon D. DeMatteis Corp.,** 827 Elmont Rd., Elmont, N. Y., Owner Builds, **$6,000,000,** two 17 story Haraway Terrace APARTMENTS, Haraway Ave. and Bay 50 St., BROOKLYN, N. Y. Dominick Salvati & Son, 175 Joralemon St., Brooklyn 1, N. Y., archts. Abrams, Hertzeberg & Cantor, 207 E. 37 St., New York, N. Y., structural engrs. Vincent Turecamo in assoc. with Herman Scherr Assocs., 18 John St., New York 38, N. Y., mechanical engrs.

▲ **Metzger Constr. Co.,** 2570 New Walden Ave., Cheektowaga, N. Y., CA Est. **$2,000,000,** 100-room, MOTEL, Transit Rd., LANCASTER, N. Y. Charterhouse Motor Hotel, c/o Paul & Harry Dosberg, Waldbridge Bldg., Buffalo, N. Y.

▲ **Jos. Bisceglia & Sons,** 13 Oakland Ave., Harrison, N. Y., CA $3,093,737, general contract, Alfred G. Berner JUNIOR-SENIOR HIGH SCHOOL, MASSAPEQUA, N. Y. Bd. Educ. Union Free School Dist. 23, Massapequa, N. Y. Bids Aug. 29. CD 9/6, under LB; **Peters & Peters, Inc.,** 58-11 32 Ave., Wooside, N. Y., CA **$546,951,** electrical work for Alfred G. Berner Junior-Senior High School (Massapequa, N. Y.).

▲ **Irving J. Feder Co.,** 292 Madison Ave., New York 17, N. Y., Owner Builds, **$2,500,000,** 200,000 sq. ft. INDUSTRIAL PARK, Zerega, Newbold, Ellis and Commerce Aves., Bronx Boro, NEW YORK, N. Y.

▲ **Parkhill Estates, Inc.,** 330 E. 80 St., New York 21, N. Y., Owner Builds, **$4,000,000,** 18 story APARTMENT, northeast corner 94 St. and Park Ave., NEW YORK, N. Y. Robert L. Bien, 342 Madison Ave., New York 17, N. Y., archt. Greenhut & Taffel, 114 E. 32 St., New York 16, N. Y., structural engrs. Sears & Kopf, 45 W. 45 St., New York 36, N. Y., mechanical engrs.

▲ **Alexander Caplan,** 5 Dorset Lane, Short Hills, N. J., Owner Builds, **$2,000,000,** 55 HOUSES, off Fairmount Ave., CHATHAM, N. J. Walter Pfeiffer, 109 Washington St., Morristown, N. J., archt.

▲ **David A. Lutin,** 14 Lindbery Ave., Rye, N. Y., Owner Builds, **$2,000,000,** 10 story APARTMENT, Prospect St., EAST ORANGE, N. J. Emil Schmidlin, 50 Evergreen Pl., East Orange, N. J., archt.

▲ **Birchwood at Brunswick,** 290 Hobart St., Perth Amboy, N. J., Owner Builds, **$6,000,000,** 300 HOUSES, off Rte. 18, NEW BRUNSWICK, N. J.

▲ **Lansdowne Development Corp.,** 2 Elm St., Westfield, N. J., Owner Builds, **$5,000,000,** 98 HOUSES between Rte. 18 and Westfield Circle, WESTFIELD, N. J. E. M. Galloway, 191 South Ave., Fanwood, N. J., archt.

▲† **Rand Constr. Co.,** 386 Park Ave., New York, N. Y., CA **$2,184,500,** ELEMENTARY SCHOOLS, McGuire Air Force Base, WRIGHTSTOWN, N. J. U. S. Housing & Home Finance Agency, Juniper & Chestnut Sts., Phila., Pa. Bids Aug. 16. CD 9/7, under LB.

▲ **United Engineers & Constructors,** 1401 Arch St., Phila., Pa., CA **$3,000,000,** design and construct FACTORY, CHESTER, PA. Scott Paper Co., foot of Market St., Chester, Pa. CD 8/30.

▲ **Lummus Co.,** 385 Madison Ave., New York 17, N. Y., CA Est. **$20,000,000,** design and construct ethylene and ethylene oxide PLANT, pipe line under Delaware River, MARCUS HOOK, PA. SunOlin Chemical Co., 1608 Walnut St., Phila. 3, Pa. CD 7/28/58.

▲ **Consolidated Eng. Co.,** 20 E. Franklin St., Baltimore 2, Md., CA **$7,140,000,** (4 bidders), Phase III, Mercy HOSPITAL, BALTIMORE, MD. Sisters of Mercy, Mercy Hospital, Calvert and Saratoga Sts., Baltimore 2, Md. Bids Sept. 8. CD 8/24.

▲ **Blake Constr. Co.,** 33 E. St. S. W., Wash., D. C., CA **$2,748,000,** Centerville Hall, WOMEN'S DORMITORY, Belair Hall and Chestertown Hall, MEN'S DORMITORIES, COLLEGE PARK, MD. Maryland University, Collage Park, Md. Bids Aug. 18. CD 8/22, under LB.

▲† **John McShain,** 1500 Arlington Ridge, Arlington, Va., CA **$13,192,000,** FEDERAL OFFICE BUILDING NO. 9, New York Ave., 19th and 20th Sts., and E St. N.W., WASH., D. C. General Services Admin., 7th and D Sts. N.W., Wash., D. C. CD 8/19, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

October 14 Kentucky

▲ **Ga., Athens**—BA 10/25—City, City Hall, sewage treatment plant and sewer lines, $2,500,000. Plans deposit $75. CD 9/30/58.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

BUILDINGS—BA

▲ **La., Shreveport**—CHURCH—BA 10/19—First Baptist Church, c/o Neild, Somdal, Smitherman, archts., 960 Jordan St., 2 story, steel frame, brick, masonry church. $2,000,000. Plans deposit $100. Extended date. CD 9/20.

Ky., Louisville—SCHOOL—BA 11/16—Louisville Bd. Educ., Five and Hill Sts., 2 story, brick Bond-Salisbury Elementary School. D. X. Murphy & Bros., Louisville Trust Bldg., Zone 2, archts. E. R. Ronald & Assoc., 554 S. 3 St., Zone 2, engrs. CD 7/27.

BUILDINGS—SLC

▲ **La., Shreveport**—CHURCH—Neild-Somdal-Smitherman Assocs., archts.; 960 Jordan St., soon lets contract, 2 story steel, frame, brick, masonry church for First Baptist Church. $2,000,000. Plans deposit $100. CD 7/24/59.

HEAVY CONSTRUCTION—LB & CA

▲ **McDowell & McDowell**, 718 Murfreesboro Rd., Nashville, Tenn., LB Est. **$2,000,000**, grading, drainage for railroad trackage, incl. 3,500,000 cu. yd. excav., Calhoun and Cleburne Counties, ALABAMA. CD 7/27/55.

BUILDINGS—LB & CA

▲ **Blount Bros. Constr. Co.**, 79 Commerce St., Montgomery, Ala., LB **$3,076,500** (Base Bid No. 1) Nuclear Reactor Bldg., LB **$3,038,500**, (Base Bid No. 2) Nuclear Reactor Bldg., LB **$2,996,500** (Base Bid No. 3) Nuclear Reactor Bldg., Ga. School of Technology, ATLANTA, GA. Bd. Regents, University System of Ga., 244 Washington St., S. W., Atlanta, Ga. Bids Sept. 7. CD 7/13.

Kaminer Constr. Co., 4783 Peachtree Rd., N. E., Chamblee, Ga. LB **$2,049,000**, (Base Bid No. 4) Nuclear Reactor Bldg. at Ga. School of Technology, (Atlanta, Ga.)

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 11 Ohio

STREETS AND ROADS

October 11 Ohio

▲ **Ill., Chicago**—BA 10/4—Bd. Comrs. Cook Co., County Bldg., Zone 2, No. 066-1315-CF, c. conc. paving, b. conc. paving, 13,230 ft. 10- to 30-in. storm sewers, $3,000,000; No. 267A-0101.9-CF, dual concrete paving, 20,070 ft. 10- to 48-in. storm sewers, $2,300,000; No. 130-1920-MFT, bit. paving, 5,612 ft. storm sewers, 8,778 ft. curb and gutter, $205,600. CD 1/14.

BUILDINGS—BA

▲ **Wis., Elkhorn**—COURTHOUSE, etc.—BA 10/11—Walworth Co., Courthouse, courthouse and jail, $2,000,000. Plans deposit $100. Ebling Plunkett & Keymar, 1220 N. Milwaukee St., Milwaukee, Zone 2, archts. CD 3/16.

▲ **O., Toledo**—SCHOOL—BA 10/28—Bd. Educ., Manhattan and Elm Sts., Roy Start School, West Toledo. $3,400,000. Bellman, Gillett & Richards, 1600 Madison Ave., archts. CD 11/9.

HEAVY CONSTRUCTION—LB & CA

▲ **Malan Constr. Corp.**, 2 Park Ave., New York, N. Y., CA **$18,366,000**, two terminal bldgs., O'Hare International Airport, CHICAGO, ILL. City Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Sept. 12. CD 9/14, under LB.

▲ **Santucci Constr. Co.**, 5015 Church St., Skokie, Ill., LB **$2,991,500**, est. $3,750,000 (7 bidders), No. 80.85-60-124, RB-27 utilities, Phase 1, Chicago O'Hare International Airport Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Sept. 9. CD 8/26.

▲ **Barton Malow Co.**, 2631 Woodward Ave., Detroit 1, Mich., CA **$17,607,000**, W-143-04, water filtration plant and two pumping stations, Allen Park, DETROIT, MICH. Wayne County Rd. Comn., 726 City-County Bldg., Detroit 6, Mich. Bids July 19, awarded Sept. 15. CD 7/29, under LB.

BUILDINGS—LB & CA

▲ **B & I Constr. Co.**, 2565 Graham St., Akron, O. Owner Builds, **$6,575,000**, Maplewood Park HOUSING, 365 houses added (50 now building, 485 built), STOW, O. CD 3/26/58.

▲ **Stakich Constr. Co.**, 830 E. 185 St., Cleveland 19, O., Own Forces, **$3,500,000**. 200 HOMES, Drake Estates, Drake Rd. ¼ mi. west of Pearl Rd., STRONGSVILLE, O.

▲ **Huber Homes, Inc.**, 6749 E. Main St., Columbus, O. Owner Builds, Total est. **$45,000,000**, $4,500,000 (1st year) (ten year program) development, 2900 HOMES, 1,000 acre tract north of Rte. 161 and east of Rte. 3, **$500,000** sewerage and water plants east of Alum Creek, WESTERVILLE, O.

▲ **Algot B. Larson**, 3837 W. Lake St., Chicago, Ill., CA **$2,000,000**, NURSES HOME and SCHOOL, Commonwealth Ave. and Surf. St., CHICAGO, ILL. St. Joseph's Hospital, 2100 Burling St., Chicago, Ill. Bids Aug. 26. CD 8/24, under LB.

▲ **The Mansfield Co.**, 1536 W. Howard St., Chicago, Ill. CA **$3,500,000**, 9 story, 80x169 ft. Ascot MOTOR HOTEL, southwest corner 11th St. and Michigan Ave., CHICAGO, ILL. Dr. M. Gecht & Eugene Heytow, 5600 N. Lincoln Ave., Chicago, Ill. A. Epstein & Sons, Inc., 2011 Pershing Rd., Chicago, Ill., archt. CD 2/3.

▲ **George A. Fuller Co.**, 111 W. Washington St., Chicago 2, Ill., CA **$6,000,000**, PHARMACEUTICAL RESEARCH LABORATORY, SKOKIE, ILL. G. D. Searle & Co., Searle Parkway, Skokie, Ill.

▲ **Permanent Constr. Co.**, 2200 N. 3rd St., Milwaukee, Wis., CA **$3,141,500**, general contract MUSEUM, MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Aug. 3, CD 8/9, under LB:

Stuff Electric Co., 1659 N. Jackson St., CA **$520,776**, electric contract for MUSEUM (Milwaukee, Wis.).

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 4 Iowa — October 7, 18 Kansas — October 18, 19 Texas

STREETS AND ROADS

October 4 Iowa — October 7 Colorado, Kansas, North Dakota — October 18 Kansas — October 18, 19 Texas

▲† **South Dakota**—BA On Or About 11/15—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., powerhouse substructure, Big Bend Reservoir Proj., Inv. No. CIVENG-25-066-61-15. Over $10,000,000. Plans deposit $30. CD 7/27.

▲† **Texas**—BA About 11/17—U. S. Eng., 100 W. Vickery St., Fort Worth, design, manufacture, deliver, install and test two 27,368 KVA generators and appurtenances, McGee Bend Reservoir, Jasper Co., Inv. No. CIVENG-41-443-61-27. $2,000,000. CD 9/22.

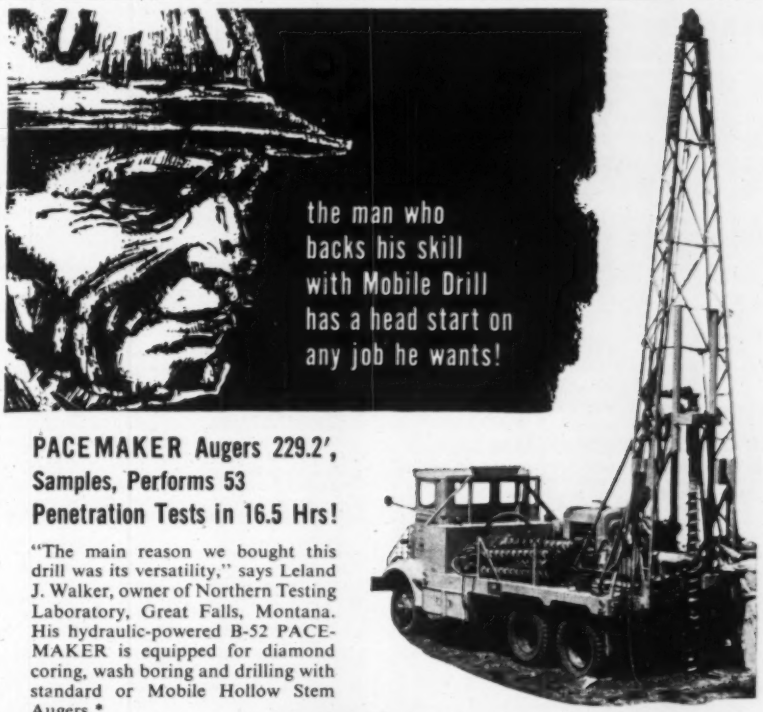
BUILDINGS—BA

▲ **Tex., Midland**—SCHOOL—BA 10/20—Midland Ind. School Dist., 1 story, 230,000 sq. ft. brick, steel, concrete Senior High School, $2,800,000. Plans deposit $50. Preston M. Geren, 1607 Fort Worth Bldg., Fort Worth, archts. CD 11/12.

HEAVY CONSTRUCTION—LB & CA

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened Sept. 20,

Tex.—**Cage Bros.**, 6959 San Pedro, San Antonio, Tex., LB $424,017, grading and strs., 10.662 mi. Hy. St. 31, Proj. F 693(3), Smith and Gregg Counties, LB $3,056,719, grading, strs., st. sewer and conc.



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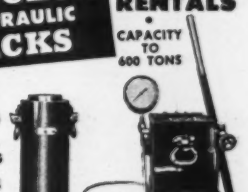

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pvt., 1.482 mi. Hy. IH 20, Proj. I 20-5(34), Dallas Co., CD 8/25; LB $992,671, grading strs., fl. base and b. conc. 25.817 mi., Hy. St. 35, Proj. F 817(4), CD 9/7; Refugio and Aransas Counties;

Tex.—Cecil Ruby Co., Inc., Brown Bldg., Austin, Tex. LB $1,588,604, grading, strs., fl. bs., and A.C. pvt., 5.699 mi., Proj. I 35-3(21), Hays Co. CD 8/25.

▲† Bud King Constr. Co., 1203 Wyoming St., Missoula, Mont., CA $1,930,776, Smith Fork Project, construction of Crawford Dam, an earthfill structure close to Crawford, Delta Co., COLORADO. Bureau Reclamation, Dpt. Interior, Paonia, Colo. Bids Aug. 30. CD 9/2.

BUILDINGS—LB & CA

▲ Standard Constr. Co., 212 S. Sixth St., Minneapolis, Minn., LB $2,033,000 (7 bidders), 5 story, St. Anne HOSPITAL, HOME FOR AGED, WINONA, MINN. Sisters of the Third Order Regular of St. Francis, Assisi Heights, Rochester, Minn. Bids Sept. 16. CD 9/13.

▲ Miles Strickland & Assoc., 3217 Del Monte St., Houston, Tex., Owner Builds, Est. $4,000,000, 335 DWELLINGS and utilities, Northwood Manor, HOUSTON, TEX. CD 12/16.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

October 11 Utah, Washington

October 13, 19, 20, 27 California

▲† Washington—BA 11/2—U. S. Eng., City-County Airport, Walla Walla, embankment protection for N.P. Ry. along Snake River, Ice Harbor Dam Reservoir, Franklin Co., CIVENG-45-164-61-2. $2,000,000. Plans deposit $3.80. CD 9/29/59.

BUILDINGS—BA

▲ Calif., Whittier — SCHOOL — BA 10/20 — Whittier School Dist., 902 West Washington Blvd., Friendly Hills High School. $2,250,000. CD 10/5.

▲ Calif., Los Angeles—MEN'S DETENTION JAIL—BA 12/21—Bd. Supervs. Los Angeles Co., Hall of Records, county men's detention jail. $16,309,151. Albert C. Martin & Assoc., 333 S. Beaudry St., Los Angeles, Calif., Charles Luckman & Assoc., 9920 Sunset Blvd., Los Angeles, Calif., Kenneth S. Wing, 30 Linden Ave., Long Beach, Calif. and William Allen, 6112 Wilshire Blvd., Los Angeles, Calif., archts. (Correction—architects address). CD 8/19.

HEAVY CONSTRUCTION—LB & CA

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 9/15,

Gibbons & Reed Co., 825 West 9 North St., Salt Lake City, Utah, LB $2,448,169, (10 bidders), grading, surf. 6.9 mi. four lane freeway US Hy. 80 between 1.1 mi. west of Grays Wells and ½ mi. west of Ogilby Rd. about 27 mi. east of Holtville, Imperial Co. CD 8/17.

▲ CALIFORNIA—State Div. Hys., 1120 N St., Sacramento,

Fredericksen & Kasler, 212 13 St., Sacramento, Calif., CA $7,093,320, 13.3 mi. four lane freeway US Hy. 99 between 3.9 mi. south McKittrick Rd. and Ming Ave., incl. 15 traffic separation structures, Kern Co. Bids Sept. 7. CD 9/9, under LB.

▲† Scheumann & Johnson Contractors, 700 North 36 St., Seattle, Wash., LB $4,126,456, est. $4,467,770, (7 bidders), two unit Spring Creek Power Plant, installation penstocks, etc., Trinity River Division, Central Valley Project near Redding, Shasta Co., Spec. DC 5381, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lewiston, Calif. Bids Sept. 15. CD 8/4.

▲ Gordon H. Ball and Ball & Simpson, 685 Delaware St., Berkeley, Calif., CA $3,612,652 roadway and structures 14.7 mi. Oroville to West Branch of Feather River Western Pacific R. R. relocation, Butte Co. Feather River Proj., Spec. No. 60-8, CALIFORNIA. State Dpt. Water Resources, 1120 N St., Sacramento, Calif. Bids Aug. 31, awarded Sept. 14. CD 9/2, under LB.

▲ F. E. Young, P. O. Box 2872, San Diego 12, Calif., LB $2,675,000, est. $3,600,000, (8 bidders), Miramar Filtration Plant and Reservoir, Miramar, SAN DIEGO, CALIF. City, Purchasing Agent, Rm. 161, Civic Center, San Diego 1, Calif. Bids Sept. 14. CD 8/31.

BUILDINGS—LB & CA

▲ Beckner Constr. Co., 2650 River Ave., San Gabriel, Calif., LB $2,070,100, (11 bidders), Magnolia HIGH SCHOOL, ANAHEIM, CALIF. Anaheim Union High School Dist., 123 N. Citron Ave., Anaheim, Calif. Bids Sept. 20. CD 8/26.

▲ Carl N. Swenson Co., P.O. Box 558, San Jose, Calif., CA $2,212,000, Proj. III, 13 COLLEGE BUILDINGS, LOS ALTOS, CALIF. Foothill Junior College, Dist. of Santa Clara Co., c/o Supt., 150 El Camino Real, Mountain View, Calif. Kump, Masten & Hurd, 325 Lytton Ave., Palo Alto, Calif., archts. CD 1/6/59.

▲ Johnson & Mape Constr. Co., Inc., 540 Santa Cruz Ave., Menlo Park, Calif., CA $4,500,000, 2 story, 260,000 sq. ft. stucco, wood frame RESEARCH and DEVELOPMENT LABORATORY, incl. 1,000 car parking, PALO ALTO, CALIF. Philco Western Development Laboratory, Philco Corp., 3875 Fabian Way, Palo Alto, Calif. Simpson & Stratta, 325 Fifth St., San Francisco, Calif., engrs. CD 12/30/59.

▲ Cahill Constr. Co., Inc., 1080 Chestnut St., San Francisco, Calif., CA $3,800,000, 19 story, 62 unit COOPERATIVE APARTMENTS, Chestnut St. between Larkin and Hyde Sts., SAN FRANCISCO, CALIF. Transan Properties, Inc., c/o Angus McSweeney, archt., 2960 Van Ness Ave., San Francisco, Calif.

▲ Bob Long Constr. Co., P. O. Box 1624, Fresno, Calif., LB $2,079,300, (7 bidders), 3 story, bsmnt., 75,000 sq. ft. rein.-con. St. Joseph's HOSPITAL addn., California and Walnut Sts., STOCKTON, CALIF. St. Joseph's Hospital, California and Walnut Sts., Stockton, Calif. Alastir Simpson, 64 N. Fulton St., Fresno, Calif., archt. Arthur A. Sauer, 2203-13 St., Sacramento, Calif., engr. Bids Sept. 7.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 26 Ontario

STREETS AND ROADS

October 24 Manitoba October 26 Ontario

▲ Alberta — BA 10/6 — Prairie Farm Rehabilitation Admin., Motherwell Bldg., Regina, Sask., earth embankment, Waterton Dam, South Saskatchewan River Proj., Total est. $7,000,000. Plans deposit $25. CD 8/29.

▲ B. C., Vancouver—BA 12/9—Greater Vancouver Sewage & Drainage Dist., 2294 W. 10th St., rein.-con. sewage treatment plant, incl. administration, power, pump, maintenance, bldgs., pre-aeration and sedimentation tanks, digesters, sludge lagoons, 20,000 ft. effluent channel and dike, Iona Island, Total est. $9,000,000. Plans deposit $100. Toby & Russell, 2256 W. 12th St. archts. Crippen Wright Engineering Ltd., 207 W. Hastings St., engrs.

BUILDINGS—SLC

▲ Ont., Oshawa—WAREHOUSE, etc.—General Motors of Canada Ltd., Oshawa, soon lets contract, 500,000 sq. ft. warehouse and office, $2,500,000. Allward & Gouinlock, 245 Davenport Rd., Toronto, archts. CD 7/27.

HEAVY CONSTRUCTION—LB & CA

▲ BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria,

Western Bridge & Steel Fabricators Ltd., 145 W. 4th Ave., Vancouver, B. C., CA $3,583,698, structural steelwork for superstructure of approach spans, Port Mann Fraser River Bridge, Port Mann. Bids June 15, awarded Sept. 9. CD 6/24, under LB.

▲ Commonwealth Constr. Co. Ltd., 700 Baylor St., Vancouver, B. C., CA Est. $5,000,000, 100,000 sq. ft., 50 ft. high, structural steel and industrial aluminum siding Airport Maintenance Base, VANCOUVER, B. C. Trans-Canada Airlines, 1080 University St., Montreal, Que. H. N. Semmens & Assocs., 1272 W. Pender, Vancouver, B. C., archts. Phillips Barratt & Part., 2090 W. 4, Vancouver, B. C., engrs. Awarded Sept. 7. CD 12/21/59.

▲ E. G. M. Cape & Co. Ltd., 79 Scollard St., Toronto, Ont., CA Est. $2,000,000, poured consrete, structure of 8 bays, each 54 ft. wide, new central grandstand at Old Woodbine Track, Queen St. E., TORONTO, ONT. Ontario Jockey Club Ltd., Box 160, Downsview, Ont. Bids Sept. 1, awarded Sept. 6. CD 8/11.

▲ Raymond International Co., Ltd., 620 Cathcart St., Montreal, Que., CA $1,818,686, (5 bidders), 687 ft. wharf north side St. Charles River Estuary, QUEBEC CITY, QUE. National Harbours Bd., West Block, Parliament Bldgs., Ottawa, Ont. Bids July 21. CD 7/29, under LB.

BUILDINGS—LB & CA

▲ W. H. Cooper Constr. Co., Ltd., 21 Hunter St. E., Hamilton, Ont., LB $1,845,700, Westmount Secondary SCHOOL, HAMILTON, ONT. Hamilton Bd. Educ., 357 Hunter St. W., Hamilton, Ont. William R. Souter & Assocs., 36 James St. S., Hamilton, Ont., archts. Wagner, McCarger & Filer Ltd., 42 James St. N., Hamilton, Ont., engrs. CD 3/3/59.

▲ Anglin-Norcross Ontario Ltd., 224 Davenport Rd., Toronto, Ont., LB $3,460,000, HOSPITAL for mentally retarded children, incl. 1 story cottages, 2 story wings, 2 story block structure administration bldg., GODERICH, ONT. Dpt. P. Wks., Parliament Bldgs., Toronto, Ont. Bids Sept. 14. CD 8/23.

▲ Robert McAlpine Ltd., Challenge St., Toronto, Ont., CA $2,000,000. SHOPPING CENTRE. Weber and Bridgeport Sts., KITCHENER, ONT. Tankoos Yarmon Ltd., 320 Bay St., Toronto, Ont. James A. Murray, 440 Bayview Ave. and Henry J. Fliess, 234 Merton St., both of Toronto, Ont., archts. Awarded Sept. 16. CD 9/19.

▲ Adrien Demontigny, 908 St. Francois Xavier, Three Rivers, Que., CA $2,994,500, NORMAL SCHOOL, THREE RIVERS, QUE. Dpt. Pub. Instruction, Parliament Bldgs., Quebec City, Que. Bids Aug. 22, awarded Sept. 13. CD 8/29, under LB.

▲ Francois Jobin, Inc., 925 Ste. Therese St., Quebec City, Que., CA Est. $2,000,000, 4 story COLLEGE extension, QUEBEC CITY, QUE. College Notre Dame de Bellevue, 1605 Chemin Ste. Foy, Quebec City, Que. CD 9/1.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ Enrique Palacios Ingerieros Portuarios, S.A., Enterprises H. Courbot & Societe des Constructiones de Batignolles, Lima, Peru, CA $4,225,994 (11 bidders), ore handling and petroleum piers, Callao Maritime Terminal, CALLAO, PERU. Port Authority of Callao, Callao, Peru. Parsons, Brinckerhoff, Quade & Douglas, 165 Broadway, New York 6, N. Y., U.S.A., engrs.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ Iraq — AIRPORT — BA 1/15 — Director General of Roads & Bridges, Baghdad, runway, taxiway, aprons, complete airfield lighting installation, water mains, fire fighting piping sys. and complete sewerage sys. with treatment plant, Baghdad International Airport, Qasr al-Milih. Over $32,000,000. Plans deposit $280. Sir Alexander Gibb & Partners, Queen Anne's Lodge, Westminster, London, S.W. 1, England, engrs.

▲ Tunisia, Tunis—RUNWAY, etc.—Bids About November 1960—Govt. Tunisia, Monsieur LATITI Moktar, Ingenieur en Chef des Chaussees, Secretariat d'Etat aux Travaux Publics et a l'Habitat, Cite-Jardins, Tunis, runway and jet aircraft facilities, Tunis International Airport, (EL AOUINA). $5,100,000. Interested firms should submit qualifications before Oct. 15, 1960. CD 8/23.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ Mich., Southfield—City, 26080 Berg Rd., South Oak Storm Drain. $4,600,000.

BRIDGES

▲ Wash., Bellingham—Whatcom Co., Co. Courthouse, Bellingham, bond election Nov. 8, bridge from Lummi Point to Gooseberry Point. $2,300,000. CD 1/26/59.

▲ ALBERTA—Dpt. Hys., Parliament Bldgs., Edmonton, Entwistle—high level bridge across Pembina River, 1,000 ft., 4 lanes, $2,000,000.

STREETS AND ROADS

▲ OHIO—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15,

Jackson Co.—modernization 10 mi. Rte 35, from Gallia Co. line NW, Thurman $3,500,000.

▲ RHODE ISLAND—State of R. I. and Providence Plantations, State House, Providence,

Kent Co.—8 mi. six-lane divided hy. Warwick. $10,670,000.

▲ ONTARIO—Ontario Dpt. Hys., Parliament Bldgs., Downsview,

Hamilton—4 lane expressway, $15,000,000.

EARTHWORK, WATERWAYS

▲† Arizona-Nevada—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., install last hydraulic turbine and generator, equipment, Hoover Power Plant, $2,871,000. CD 9/30/58.

▲† Arizona—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., main conveyance channel, Wellton-Mohawk Div., Gila Project, drainage wells, tile and collector drains, Gila Project, $4,308,000.

▲† Arizona—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Glen Canyon-Curecanti 230 kv. transmission line and 115 kv. Flaming Gorge-Oak Creek transmission line, $5,637,000.

▲† Colorado—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Leon-Park Feeder Canal, 18 mi. Southside Canal, Grand Mesa Reservoirs rehabilitation, 11 mi. Bonham-Cottonwood Pipeline, Upper and Lower Molina Power plants, transmission line, Bonham Dam and Reservoir, Collbran Proj. $5,163,000.

▲ Hawaii—West Oahu Soil Conservation Dist. and City and County of Honolulu, Punchbowl and King St., Honolulu, 9.3 mi. channel imprvs., Waianae Iki Watershed Proj., joins Waianae Nui Proj., Waianae. $2,432,300.

▲† Montana—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., first section, Yellowtail dam, camp and access roads, Yellowtail Unit, Missouri River Basin Project. $2,500,000. CD 1/16/53.

▲† Montana—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., railroad relocation, and road relocation, Clark Canyon Dam, East Bench Unit, Missouri River Basin Project. $3,222,000. CD 9/15/59, 5/25/44.

▲† Nebraska—Bureau Reclamation, Dept. Interior, Denver Federal Center, Denver, Colo., Red Willow Dam and Culbertson Exten., canal, laterals. 2nd Sect. Culbertson Canal, first stage Red Willow Diversion dam and Red Willow Canal and lateral systems. $5,439,000. CD 9/11/59.

▲† Nebraska—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Sherman Dam and reservoir, relocating roads, transmission lines, Arcadia Div. Works, Sherman Feeder Canal, Arwell and Lower

Main Canal and laterals, Missouri River Basin Project. $8,023,000. CD 10/1/58.

▲† **Oklahoma** — Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., complete Fort Cobb Dam and Reservoir, aqueduct facilities, Foss dam and aqueduct facilities, Washita Basin Proj., $7,663,000. CD 3/21/56.

▲† **Oregon**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., complete Emigrant Dam and reservoir, canals, laterals, West and Talent Lateral, Rogue River Basin, Talent Div. $2,100,000.

▲† **Oregon**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., complete Prineville Dam and Reservoir, Diversion Dam, Diversion Canal, Ochoco and Barnes Butte Pumping facilities, distribution canals and drain, Crooked River Proj. $2,235,000.

▲† **Texas**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Twin Buttes Dam and Reservoir, main canal and laterals, San Angelo Proj. $11,054,000.

▲† **Texas**—Soil Conservation Service, Dpt. Agriculture, P. O. Box 417, Temple, 36 flood (County) flood-detention structures and straightening 20 mi. stream channel in Cedar Creek Watershed, Canton area, Van Zandt Co. Kaufman-Van Zandt-Rockwall Soil Conserv. Dist. Sponsors, $2,000,000.

▲† **Utah**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., completing Stanaker Dam, Fort Thornburgh Diversion Dam and Stanaker Feeder Canal, Central Utah Participating Project, Vernal Unit. $2,254,000. CD 9/7/44.

▲† **Utah**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Willard Dam, Davis Aqueduct, Davis laterals, structures in Bountiful, Willard Canal, pumping plants, Weber Basin Project. $6,711,000. CD 9/16/57.

▲ **N. B., Bathurst**—Port of Bathurst, Bathurst, dredging 27-foot channel, $4,000,000.

AIRPORTS

▲† **Mont., Great Falls**—MISSILE LAUNCH FACILITIES U. S. Eng., 1519 S. Alaskan Way, Seattle 5, Wash., 150 missile launch facilities near Malstrom Air Force Base, incl. underground steel lined rein.-con. launch tube 80 ft. deep with underground rein.-con. annular equipment area, prefabricated metal support bldg., trolley beam and hoist, grading, access road, culverts, cattle guards and chain link fencing, diesel electric generator and water chiller with air cooled condenser, 15 launch control facilities, underground rein.-con. control center connected to above ground support bldg., water supply and sewage treatment facilities, equip. incls. oxygen generator, water storage tank, kitchen equipment, diesel electric generators, water chillers, air cooled condensers, air handling unit and blast damper, $40,000,000. For Corps of Engineers, Ballistic Missile, 9610 Bellanca Ave., Los Angeles 45, Calif. Bid late in September. Bidders must pre-qualify. Information on project from Seattle Office. Plans will be distributed to selected list bidders from Los Angeles Office.

▲† **N. J., Wrightstown**—DEFENSE MISSILE BOMARC ADDNS.—U. S.. Eng., 2635 Abbotsford Ave., Phila., Pa., defense missile Bomarc addns., McGuire Air Force Base. $3,000,000 funds released.

UNCLASSIFIED

▲ **California**—TUNNEL—State Div. Hys., 1120 N St., Sacramento, two lane Caldecott Tunnel (formerly Broadway Tunnel), State Sign Rte. 24 in Oakland, Alameda Co. $12,500,000. CD 12/2/59.

PUBLIC BUILDINGS

▲† **D. C., Wash.**—FEDERAL OFFICE—General Services Admin., 19 and F Sts. N. W., Wash., D. C., plans by Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, Wash., Federal Office Bldg. No. 8, Food and Drug Administration Bldg., 2, 3 and D Sts. S. W. $15,105,000. CD 5/17.

▲† **D. C., Wash.**—FEDERAL OFFICE—General Services Admin., 19 and F Sts. N. W., Wash., D. C., plans by Holabird & Root & Burgee, archts.-engrs., 180 N. Wabash St., Chicago, Ill., and Carroll, Grisdale & Van Allen, 6 Penn Central Plaza, Phila., Pa., Federal Office Bldg. 10A and 10B, Independence Ave. between 6 and 8 Sts. S. W. for Federal Aviation Agency, etc. $38,326,500 appropriated.

▲ **Fla., Fort Lauderdale**—HOUSING—Ft. Lauderdale Housing Auth., 88 Kennedy Dr., plans by Robert Jahelka & William H. Peck Assocs., 2020 N. E. 17th Court, 250 housing units, $2,500,000. Philpott, Ross & Saarinen, 1191 S. E. 17th St., consult. engrs.

▲† **Ga., Albany**—HOUSING—Procurement Office, Turner Air Force Base, plans by James Wise, Simpson, Aiken & Assocs., 873 Spring St. N.W., Atlanta, 430 Capehart housing units. Over $3,000,000. Carver Hunt, 2151 Desmond Dr., Decatur, consult. engr. CD 7/13.

▲ **Ga., Columbus**—HOSPITAL ADDN.—City Hospital Bd., City Hall, plans by E. Oren Smith, 1236 Wildwood Ave., Columbus Medical Center Hospital addn. $3,000,000. CD 11/24/52.

▲ **Mass., Lowell**—SCHOOL—City, City Hall, plans by M. A. Dyer Co., 24 School St., Boston, elementary school, S. Common St. $2,175,000. Bids Oct. 15. CD 7/16/59.

▲† **Mont., Fort Harrison**—HOSPITAL—Veterans Admin., Munitions Bldg., Wash., D. C., plans by Page & Werner, Thisted Center, Great Falls, Mont., and Ellerbe & Co., 333 Sibley, St. Paul, Minn., 160-bed hospital, general and medical hospital, dining hall and kitchen building alterations, installation sewage disposal plant, $5,400,000. CD 10/3/59.

▲ **Neb., Fremont**—POWER GENERATING UNIT—City, Utilities Bd. P. Wks., power generating unit 16,500 kw. or 22,000 kw for power plant. $3,703,000 or $4,491,000. Lutz & May, Finance Bldg., Kansas City, Mo., consult. engrs. CD 7/20/54.

▲ **N. Y., Brooklyn**—BERNARD HABER HOUSES—New York City Housing Auth., 299 Broadway, New York, Zone 7, Proj. NYS-109 Bernard Haber Houses, 3 bldgs., 375 units, Surf Ave., W. 24 St., Riegelman Boardwalk, W. 25 St. $4,692,000.

▲ **N. D., Bismarck**—POST OFFICE, etc.—General Services Admin., 19th and F Sts. N.W., Wash., D. C., plans by Leonhard & Askew, 218 Professional Bldg. post office and courthouse, $4,400,000 appropriated. CD 6/1/59.

▲ **O., Kettering**—MEMORIAL HOSPITAL—Bd. Trustees, C. F. Kettering Memorial Hospital, Kettering, plans by Young, Sullivan & Lecklider, 3rd National Bldg., Dayton, 4 story, 325-bed hospital, $9,000,000. CD 12/4.

▲ **Pa., Phila.**—POST OFFICE-COURT HOUSE—General Services Admin., 19th and F Sts. N. W., Wash., D. C., plans by Ballinger Co. & Harry Stennfeld, 1625 Race St., extension and remodeling of post office and court house, $7,072,000 appropriated. CD 9/18/58.

▲ **Pa., University Park**—ADMINISTRATION, etc.—Pa. State University, administration bldg., $2,000,000; agricultural administration bldg., $2,000,000; agricultural engineering addn., $750,000; College of Business Administration, $2,756,000; Chemical Engineering, Unit 3, $1,500,000; electrical engineering addn., $1,000,000; mineral industries, $3,000,000; Osmond laboratory addn., $2,750,000; physical education bldg. for women, $1,750,000; Nuclear Research Facilities, Unit 2, $3,000,000; physical science addn., $2,500,000. CD 8/25.

▲ **S. D., Brookings**—DORMITORIES, etc.—South Dakota State College, 2 dormitories, apartments for student families, dining-hall. $2,000,000.

▲† **Tenn., Memphis**—FEDERAL OFFICE—General Services Admin., 19th and F Sts. N.W., Wash., D. C., plans by A. L. Aydelott & Assoc., and Thomas F. Faires & Assoc., Inc., Falls Bldg., federal office, $13,655,000 appropriated. CD 5/18/59.

▲† **Wash., Richland**—POST OFFICE and FEDERAL OFFICE—General Services Admin., 19 and F Sts. N.W., Wash. 25, D. C., plans by Culler, Gale & Martell, Realty Bldg., Spokane, Wash., and Funk, Murray & Johnson, S.164 Division St., Spokane, Wash., post office and federal office bldg. $9,790,000. Norrie & Davis, Realty Bldg., Spokane, consult. engrs. CD 2/4.

▲ **Wis., Madison**—MATHEMATICS—University of Wisconsin, Trenting Colony, Route 2, plans by Herbst, Jacoby, Herbst, 1249 N. Franklin St., Milwaukee, mathematics bldg. $2,000,000. CD 1/30/59.

COMMERCIAL BUILDINGS

▲ **Calif., Stockton**—STUDENT RESIDENCE CENTER—College of the Pacific, N. Pacific Ave., plans by Bissell & Eckland, 41 N. Hunter St., Clowdsley & Shipple, 206 Exchange Bldg. and Mortensen & Johnson, 142 N. Calif. St., all of Stockton, Calif. student residence center, College of the Pacific. $2,000,000. CD 11/10/58.

▲ **Fla., St. Petersburg**—APARTMENT—Joe Putman, 15062 Gulf Blvd., 150 unit, 11 story, L shape, concrete apartment, $3,800,000.

▲ **Ind., South Bend**—LIBRARY—University of Notre Dame, South Bend, plans by Ellerbe & Co., 333 Silbey St., St. Paul, Minn., 3 story, limestone, brick college library, $8,000,000. CD 4/29/59.

▲ **Iowa, Burlington**—SHOPPING CENTER—Percy Wilson Investment Co., 134 N. La Salle St., Chicago, Zone 2, 175,000 sq. ft. Fairway Shopping Center, U.S. Hys. 34 and 61, $3,000,000.

▲ **Ky., Newport**—HOUSING—Lakeside Manor Corp., 240 4 St., plans by Merriweather, Mayre & Assoc., 248 Short, Lexington, Ky., and Edw. J. Beiting, Jr., 1002 Monmouth, duplex type housing units, Alexandria Park, Cold Springs Area. $2,400,000. CD 4/28/59, Public Buildings, Campbell County Housing Comn. as owner.

▲ **N. J., Audubon**—SHOPPING CENTER—Morris A. Kravitz, 225 S. 15 Ave., Phila., Pa., shopping center, 2,300 car parking. $4,500,000.

▲ **N. J., Elizabeth**—HOSPITAL—St. Elizabeth Hospital, 204 S. Broad St.,-plans by Eggers & Higgins, 100 E. 42 St., New York 17, N. Y., hospital addn. $5,000,000. D. Stasio & Van Buren, 136 Liberty St., New York 6, N. Y., structural engrs. Slocum & Fuller, 207 E. 32 St., New York 16, N. Y., mechanical engrs. CD 1/26/55.

▲ **N. J., Westwood**—APARTMENTS—Berdis Bros., 11 Madison Ave., plans by Eugene DeMartin, 551 Main St., East Orange, garden apartments, Jefferson Ave. $2,000,000.

▲ **N. Y., Buffalo**—APARTMENT—Benderson Development Corp., 123 Franklin, plans by Michael De Angelis, 225 Cutler Bldg., Rochester, 16 story, rein.-con. Delaware Towers apartment, Delaware Ave. between Lexington and Highland. $2,000,000. CD 11/24/59.

▲ **N. Y., Flushing**—HOSPITAL addn.—Salvation Army, 120 W. 14 St., New York, Zone 11, plans by Kelly & Gruzen, 10 Columbus Circle, New York, Zone 19, Booth Memorial Hospital alteration, addn. $2,000,000. Lev Zetlin, 114 E. 32 St., New York, Zone 16, structural engr.

▲ **N. Y., Greenburgh**—MOTEL—Praver Assoc., Horace Harding Blvd. and 99 St., Corona, plans by Paul & Jarmul, 89-51 164 St., Jamaica, 100-room Skylark Motel. $2,000,000.

▲ **N. Y., Long Beach**—APARTMENT—Taylor International, 420 Lexington Ave., New York, Zone 17, plans by Paul & Jarmul, 89-51 164 St., Jamaica, 10 story U-shape Neptune Towers Apartment, Broadwalk. $3,500,000. Herman Scherr, 18 John St., New York, Zone 6, mechanical engr. Abrahams, Hertzberg, Cantor, 307 E. 37 St., New York, Zone 16, structural engrs.

▲ **N. Y., New York**—HOSPITAL ADMINISTRATION—Memorial Center for Cancer, 444 E. 68 St., Zone 21, plans by Rogers & Butler, 219 E. 44 St., Zone 17, hospital administration, 423-431 E. 66 St. $2,500,000.

▲ **N. Y., New York**—HOTEL TAFT—Zeckendorf Hotels Corp., 383 Madison Ave., will not construct 15 story Taft HOTEL addn., 7 Ave. and 50 St. $10,000,000. Project abandoned. CD 3/14.

▲ **N. C., Charlotte**—SHOPPING CENTER—Westgate Corp., c/o R. S. Noonan & Co., archts., 24 Duke St., York, Pa., 500,000 sq. ft. Queensgate shopping center, 60 stores, paved parking area for 5,000 cars, $5,000,000.

▲ **O., Mt. Healthy**—HOUSES—Terris Dev. Co., Mercury Ave., 240 1-fl., bsmnt. brick houses off Five Mile Rd., paving, sewer-water lines, $4,650,000. Edward Niemeier, 4484 Harrison Ave., Cincinnati, engr.

▲ **Tex., Dallas**—COMMERCIAL BLDG.—Trammell Crow, Dallas Market Center, 425 S. Field St., 250,000 sq. ft., masonry commercial bldg., Dallas Market Center, 2300 Stemway Freeway, $2,500,000.

▲ **Tex., Houston**—HOTEL—Green Rose Associates, Inc., c/o J. G. Coman II, 3400 Montrode Blvd., 200 unit motor hotel, Dover and Airport Blvds. $3,000,000.

▲ **Tex., Pasadena**—BANK-OFFICE—Pasadena First State Bank, plans by Mackie & Kamrath, 2713 Ferndale St., Houston, and Doughtie & Porterfield, Pasadena, 10 to 15 story bank-office, Southmore and Tatar Sts. $4,000,000. Walter P. Moore, 2 Pinedale St., and Bernard Johnson & Associates, 4926 Travis St., Houston, consult. engrs.

▲ **Wash., Tacoma**—HOSPITAL—Mary Bridge Hospital, 311 S. 1 St., plans by Lea, Pearson & Richards, 240 S. Stadium Way, hospital addn. $2,000,000. Bids 1961. CD 12/15/58.

▲ **Sask., Regina**—SHOPPING CENTER, etc.—Owner, c/o Peter Forrest of Schmidt, Forrest & Assocs., archts., 209 Somerset Block, shopping center and hotel to incl. 3 story underground, 13 stories above ground, 200x280 ft. steel frame hotel above shopping center, 11th Ave. $10,000,000.

INDUSTRIAL BUILDINGS

▲ **Mass., Yarmouth**—POWER PLANT—Cape & Vineyard Electric Co., Yarmouth, power plant, east end Cape Cod Canal. $25,000,000.

▲ **Tex., Houston**—OFFICE—Houston First Federal Savings & Loan Assn., 1114 Capitol Ave., 12 story office, Fannin and Capitol Sts. $5,250,000. Bids in fall. CD 7/29/59.

▲ **Tex., Houston**—PLANT—Farmer Brothers Coffee Co., 6315 Long Dr., coffee roasting plant, Ship channel, $2,000,000; warehousing or storage, $200,000.

▲ **Wis., Middletown**—RESEARCH CENTER—A. O. Smith Corp., 3533 N. 27th St., Milwaukee, 1 and 2 story, 50,000 sq. ft. Research Center. $2,000,000.

▲ **Ont., Hamilton**—PLANT—Columbian Carbon (Canada) Ltd., 7147 Park Ave., Montreal, Que., manufacturing plant, Beach Rd. and Parkdale Ave. $5,000,000. Brown & Root Ltd., 5460 Patricia Ave., Montreal, Que., consult. engrs. CD 8/5.

▲ **Ont., Sarnia**—PLANT—Imperial Oil Ltd., 445 Christina St. S., 30,000,000 gal. a year capacity Benzene Plant. $5,000,000.

▲ **Que., McMasterville**—LABORATORY—Canadian Industries Ltd., 1253 McGill College Ave., Montreal, plans by Dobush, Stewart & Bouke, 4635 Sherbrooke St. W., Montreal, Central Research Laboratory expansion. $3,500,000.

AMERICANS ABROAD

▲ **Greece**—Public Power Corp. of Greece, Athens, Kremasta Hydroelectric Project, Acheloos River Development, incl. 570 ft. high dam and 400,000 kw. concrete power plant near Agrincon. $82,000,000. Engineering Consultants, Inc., 901 South Navajo, Denver, Colo., U.S.A., consult. engrs. CD 7/12.

▲ **Korea, Taegu**—PLANT—Korea Nylon Co., No. 74, 1-KA, Myung-Dong, Choong-Ku, Seoul, 2,000,000 lbs. nylon filament yarn plant. $3,200,000. Chemtex, Inc., 821 United Nations Plaza, New York, N. Y., U.S.A., consult. engrs.

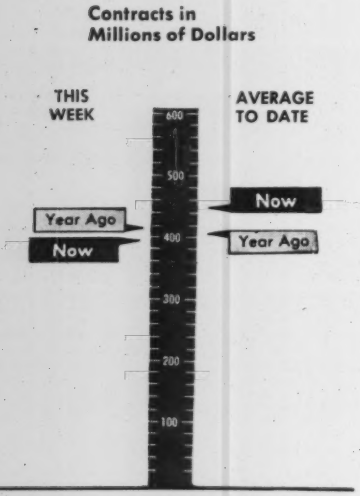
▲† **Liberia, Monrovia**—RADIO RELAY STATION—U. S. Information Agency, 1776 Pennsylvania Ave. N.W., Wash. 25, D. C., U. S. A., radio relay station consisting six 250,000 watt and two 50,000 watt transmitters. $12,627,000. Page Communication Engineers, Inc., 710 14 St. N.W., Wash., D. C., U. S. A., engr.

▲ **Turkey, Istanbul**—JET AIRPORT, etc.—Govt. of Turkey, Ankara, jet airport, incl. runway, lighting, instrument landing facilities, ramps and terminal bldg. $25,000,000. Ken R. White, 1567 Marion St., Denver, Colo., U.S.A., consult. engr.

(Proposal Advertisements see pp. 72 to 74)

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

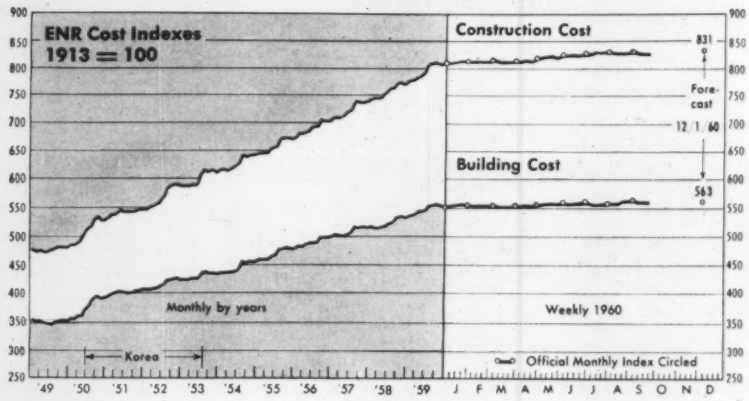
Contracts Awarded In 50 States By Type	This Week millions	Cum. 39 wks 1960	Chge '59-'60 %
All Heavy Construction	$409.5	$17,458.2	+10
By Ownership			
PRIVATE	175.1	9,340.2	+17
PUBLIC	234.4	8,118.0	+3
State & Municipal	209.6	6,280.4	+12
Federal	24.8	1,837.6	−19
By Type of Work			
PUBLIC			
Waterworks	22.9	362.7	+15
Sewerage	13.8	442.8	−11
Bridges*	34.0	637.4	+40
Highways	78.9	2,554.3	+10
Earthwork, Dams & Waterways	9.7	607.3	−14
Buildings:			
Excl. Housing	37.6	1,841.8	−9
Housing	5.8	530.6	+4
Unclassified	31.7	1,144.1	+5
PRIVATE			
Buildings:			
Mass Housing	98.3	4,675.1	+31
Commercial	36.3	1,874.3	+10
Industrial	33.3	2,130.3	−7
Unclassified	7.2	657.5	+67

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Sept. 22 millions	Cum. 38 wks 1960	Chge '59-'60 %
Corporate Securities	$ 88.2	$2,277.5	−15
State and Municipal			
All Except Housing	133.8	4,907.3	+9
Housing	....	185.5	+147
Federal Loans	1.9	128.0	+19
Federal Aid	....	2,717.8	−13
Total Nonfederal	$223.8	$10,216.2	−3
Federal Appropriations:			
Projects in U. S.	....	$2,556.1	−18
Outside U.S.	....	157.8	+3486
Total New Capital	$223.8	$12,930.1	−5



ENR INDEXES (1913=100), 20-cities' average	Week of Sept. 22 1960	% Change from Aug. 25 1960	% Change from Sept. 24 1959
Construction Cost	830.10	+0.01	+2.27
Building Cost	561.97	−0.07	+1.13

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	August 1960 (millions)	Percent Change from last Month	Percent Change from last Year
Total U. S. (50 States)	$123,891	+0.8	+8.6
By Ownership—			
Private	55,959	+1.1	+11.5
State & Municipal	53,665	+0.2	+6.1
Federal	14,267	+1.0	+6.9
By Type of Work—			
Waterworks	2,888	+1.0	+7.4
Sewerage	3,945	+1.1	+8.4
Bridges	3,316	−0.4	−0.7
Highways	13,691	+0.2	+8.6
Earthwork, Dams and Waterways	11,850	−0.04	+2.6
Public Buildings	22,291	+0.3	+8.0
Industrial Buildings	18,202	+2.8	+7.1
Commercial Buildings	26,975	+0.5	+18.8
Unclassified, Private	10,782*	+1.0	+2.8
Unclassified, Public	9,952	+1.1	+5.3

* Includes Private Bridges, $97 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

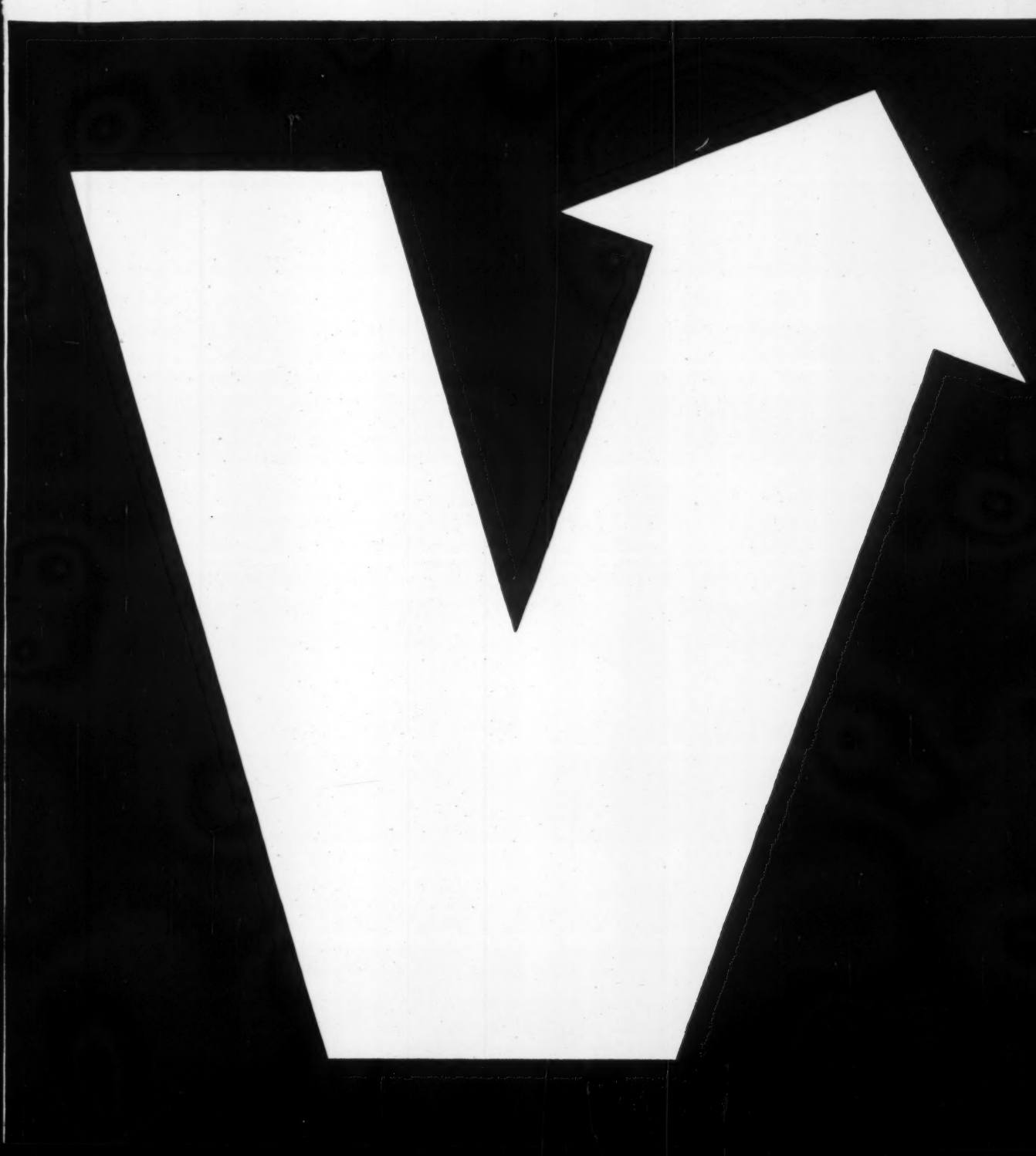
	1960 Aug. (millions)	1960 8-months (millions)	Percent Change from 1959 Aug.	Percent Change from 1959 8-Mos. (a)
Total U. S. (50 States)	$2,120	$15,746	+58.1	+27.5
By Ownership—				
Private	1,310	8,998	+108.0	+30.1
State & Municipal	527	5,575	−10.7	+23.3
Federal	283	1,173	+134.3	+28.9
By Type of Work—				
Waterworks	47	253	+7.9	−11.1
Sewerage	65	445	−26.8	+3.3
Bridges	5	162	−76.2	−37.5
Highways	146	1,812	−0.2	+63.3
Earthwork, Dams and Waterways	39	183	+171.3	+33.1
Public Buildings	337	2,996	−2.2	+18.2
Industrial Buildings	635	2,624	+213.3	+26.8
Commercial: Mass Housing	259	3,766	+28.0	+61.5
Other Building	248	2,008	+30.5	+15.3
Unclassified, Private	168	600	+384.8	−22.5
Unclassified, Public	171	897	+217.1	+33.4

FLOW OF PROJECTS OUT OF BACKLOG INTO CONTRACTS

Total U. S. (50 States)	$807	$7,416	+2.2	+5.0
By Ownership—				
Private	331	2,959	−10.2	+18.6
State & Municipal	357	3,251	+7.4	+5.6
Federal	119	1,206	+34.5	−19.0

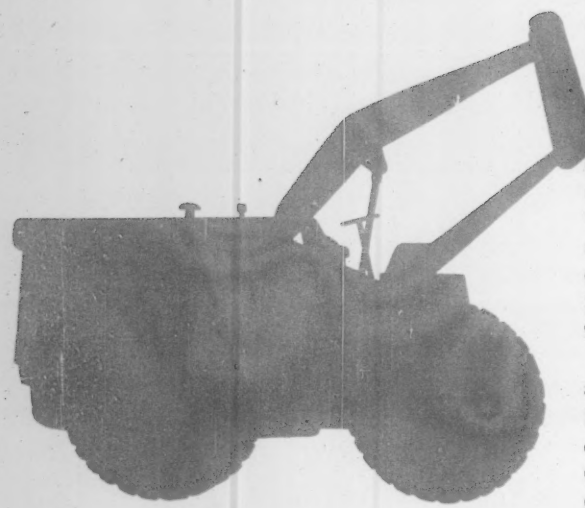
(a) Based on average week: 34 weeks in first eight months of 1960 and 35 weeks in first eight months of 1959.

CUMMINS V DIESELS
MORE COMPACT
MORE POWERFUL



CUMMINS

ADDS A 700HP V12 DIESEL TO A GROWING LINE OF CONSTRUCTION ENGINES



Newest of the V diesels from Cummins is the VT12-700. A real workhorse. It's big in horsepower, but not in size. Truly the most compact, most powerful highspeed engine on the market. And turbocharging permits full rated horsepower up to 10,000 feet.

Like the VT-700, the new, naturally aspirated V12-525 has features that will reduce operating costs. Both 12 cylinder engines have internal fuel and oil lines which eliminate damage to exposed tubing and connections. The revised PT fuel system automatically compensates for wear—needs only the simplest maintenance. A basic block improvement gives you a stronger, more durable engine.

The increased power of these new diesels is a natural advance from the famed VT-600 and NVH-450. For more than ten years these two models have had the field to themselves. Only Cummins could better their proven performance. How? By redesigning the cylinder area to permit higher horsepower at no increase in engine size *or engine wear.*

This big bore feature is also part of the V diesels at the lower end of the line . . . the V8-350 and the VT8-430. All new, all power from the pan up, they're the first 8 cylinder V diesels in this horsepower bracket built specially for construction equipment. Every kind of application, every operating condition was considered in their design. Service is easy because all accessories are mounted in the 90° angle between the cylinder banks.

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CUMMINS

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Overseas Factory • Cummins Engine Company Ltd., • Shotts, Lanarkshire, Scotland 6-17-60

V8·350 HP

VT8·430 HP

NVH·450

V12·525 HP

VT·600 HP

VT12·700 HP

Houses Overpriced? Homebuilders

Top leaders in homebuilding and home manufacturing will look more to their own talents and technical progress to boost housing volume and less to playing an annual numbers game with Congress and federal housing agencies.

During the last 10 years, spokesmen for homebuilders almost annually have viewed the outlook for housing with alarm. They trooped to Capitol Hill and federal agencies regularly to ask for—and usually get—some type of help. Most often the help was in the form of longer mortgage maturities and lower down payments. Once they succeeded in getting Congress to vote $1 billion of Treasury funds, which the Federal National Mortgage Association (Fannie Mae) could use to buy government-backed mortgages at par.

Little serious widespread effort was made to eliminate the basic cause for these temporarily effective shots in the arm—the high cost of the product itself.

But last week a selected group of executives in homebuilding, home manufacturing and building materials companies got together at the Washington, D. C., headquarters of the National Association of Home Builders and bluntly admitted that it was time for a change on their part. More than this, they also conceded that times have changed. Empty is the hypodermic syringe that in recent years had been successfully used to inject life into a sagging housing market. For years, housing financed with the backing of the Veterans Administration could be obtained without a down payment. It was only theory, however. Intermittently for several of the past years, VA mortgages were impossible to obtain in practice, even if the buyer were ready, willing and able to invest some of his own cash.

And almost every year, cash payments required for housing bought under the Federal Housing Administration-insured mortgage program were slashed almost to the disappearing point. Early this year cash requirements were lowered still another notch when housing starts generally continued a month-to-month decline. This time the expedient didn't work. Starts continued much below the levels of last year.

Builders now are face-to-face with hard economic facts; they have priced their product out of the reach of the largest part of the population. And attempts to upgrade the housing market —a euphemism that concedes housing prices are higher—are failing to capture the imagination of those who already own a house. Those are the people at whom "upgrading" has been aimed, the idea being that persons who own a house can sell it and use the money to buy a more expensive house.

But builders admit that this is a thin market. For the most part the homeowner who was supposed to upgrade his housing standard sat on his hands. Builders who are marketing conscious say that it takes a lot of house at not too great an increase over the price of relatively new housing to encourage a family to go deeper into hock for another 30 years.

They say the higher-priced product generally has not been that attractive. Now they are preparing to attack the cost factors and also take a look at the basic shelter house that they abandoned a few years ago. They are frankly worried about the dangers in not providing for the largest part of the potential housing market. Martin L. Bartling, Jr., president of NAHB, said this lack "has serious economic and social implications. We are not serving the greatest part of the market. Unless we do, Congress will, and we probably won't like the 'panaceas' it offers."

But if the implications of failure to supply a needed market worry builders and home manufacturers, the problem of cost is more worrisome. In fact, they indicate they didn't choose to price themselves out of the market; others did it for them. In the communities themselves, lot requirements jumped to unrealistic sizes, specifications for streets equaled those of a state high-

Four-Hour Subcontractor Bid Plan

The idea of the "Four-Hour Subbid Plan" has caught fire on the West Coast.

Under a new agreement that becomes effective November 1 in 11 southern California counties, all subcontractor bids must be turned in to the general contractors bidding on specific jobs at least four hours before the general bid is submitted to the awarding authority.

Contractors, subcontractors and building material suppliers involved handle annual construction volume of nearly $ 1 billion in the 11 counties.

Under current practices, subcontractors can submit their bids to the general contractors right up to the general bid deadline, a practice that gives the general little time to investigate the low-bidding subs.

The four-hour plan, developed and initiated by the Associated General Contractors, will allow a general to check credit, experience, integrity and responsibility of all subs bidding. It also will provide the bidding subs with added assurance there will be no opportunity for bid shopping by a general contractor.

Signing the agreement last week were four groups representing general contractors and 35 subcontracting trade associations and material dealer groups. General contractor organizations signing included Building Contractors Association, Home Builders Association, Engineering and Grading Contractors Association and the Southern California Chapter of AGC.

The plan will be operated by the Construction Bidding Practices Conference of Southern California. It will not act as a bid depository; it will merely hold all subcontractor bids. These will remain sealed, except in any case where a dispute might arise.

Covered under the agreement are the counties of Los Angeles, San Bernardino, Riverside, Orange, Imperial, Inyo, Kern Mono, San Luis Obispo, Santa Barbara and Ventura.

The plan will operate for private and public construction projects when a predetermined time for bid submission has been established.

The plan has been in operation in North and South Carolina and the St. Louis area for about two years (ENR Nov. 20, 1958, p. 104).

The plan is one of two major systems in operation throughout the country, which are aimed at stemming bid shopping by general contractors and bid peddling by subcontractors.

Think So

way, sanitary system specifications that would adequately serve the population of one crowded city block were in areas where there were only three families or less to the acre.

Manufacturers, too, came in for some share of the blame. Builders said it took too many materials manufacturers to produce one component. Cited as an example was a complete door installation; one company makes the locks, another company makes the hinges, another company produces the wood, another uses the wood to produce a door, and "by the time a builder puts the door in place with hardware, frame and sill, a dozen companies have had a hand in it," one builder complained.

The problem of costs is not expected to be beaten overnight. It will take time, research and money. One of those present, mildly criticized some participants for thinking and hoping the battle could be won in a year or two. Carl Koch, Cambridge, Mass., architect, warned the "practical approach to research is long term. We should be more interested in 1971 than in 1961."

But interested they were, particularly in the outlook. Nathaniel H. Rogg, director of the NAHB economics department, says the present rate of housing volume "will continue at least through mid-1961."

Goes West

The bid depository system is the other method used by construction groups. This operation recently was adopted by the Construction Subcontractors Association of San Diego under the name of the Bid Depository of San Diego County (ENR Apr. 7, p. 26).

Others also are in effect in Seattle, Columbus, Dallas, Ft. Worth, Fresno, San Francisco, Stockton and St. Paul (ENR Jan. 29, 1959, p. 77).

Although details vary slightly, the basic idea in all cases is the same. An awarding authority—architect, engineer, owner, government official, general contractor—certifies the bid depository as the official trustee through which subs and suppliers can submit their bids on a specific project. Employees of the organization receive the sealed bids and lock them up until the scheduled bid opening.

Tollroad Job Off Until Next Year

A construction start this year on the proposed 97-mile extension of Florida's Sunshine State Parkway appears doomed. The extension from Fort Pierce to Orlando is stymied by legal action, legislators' opposition and gubernatorial "courtesy."

- A Circuit Court judge at Tallahassee has delayed for at least 60 days a ruling in a suit seeking to block sale of $55 million worth of revenue bonds to finance the project.
- A state legislative committee has ordered a probe of the Turnpike Authority because it agreed to a negotiated sale of the bonds to underwriters instead of putting the issue up for competitive bids.
- And outgoing Gov. Leroy Collins decided that the governor to take office in January should not be committed to such a large undertaking by an administration leaving office.

The court action was initiated by Florida Free Highways Association and a group of central Florida businessmen. They sought from the court an immediate preliminary injunction to prevent sale of the bonds (ENR Sept. 1, p. 69). The injunction request was denied, as was the request for dismissal of the suit by the authority, State Road Department and the investment banking firm of Shearson, Hammill & Co. of New York City. Both sides were ordered to file briefs in 60 days.

The plaintiffs charge that the authority had no right to negotiate the sale of bonds nor to agree to a ban on construction of additional free or tollroads during the life of the proposed bonds. Under the agreement, the bonds would mature April 1, 2000.

These charges brought a state legislative inquiry into the operation of the Turnpike Authority.

With all this action brewing, Governor Collins said he would leave the job of building the road to his successor, Governor-nominee Farris Bryant. Nomination to the office is tantamount to election in the state.

Mr. Bryant says he is agreeable to the extension, but that before making any commitments, he would have to be filled in on the status of Florida's entire roadbuilding program and details of financing.

Low Bids 'Save' City $4 Million

Fierce competition among contractors for new business is stressed in a report by Milwaukee's waterworks officials. It now looks as though a waterworks expansion program that was estimated in 1956 at $54 million will come in at a final construction price close to $50 million.

So far, $35 million worth of revenue bonds have been sold. Chances now are good that the next issue will be one for $15 million, instead of $19 million that had been expected to be offered earlier.

On one phase of the area's expansion plan, 90% of the construction needed has gone to contract. Actual contract costs are a shade under $13 million. This compares to the 1956 estimate of $15.5 million made by Black & Veatch of Kansas City, Mo., who are the consultants for the Milwaukee waterworks program.

The contracts awarded are for an intake tunnel, a raw water pumping station, a filtered water pumping station, a purification plant and a water storage well.

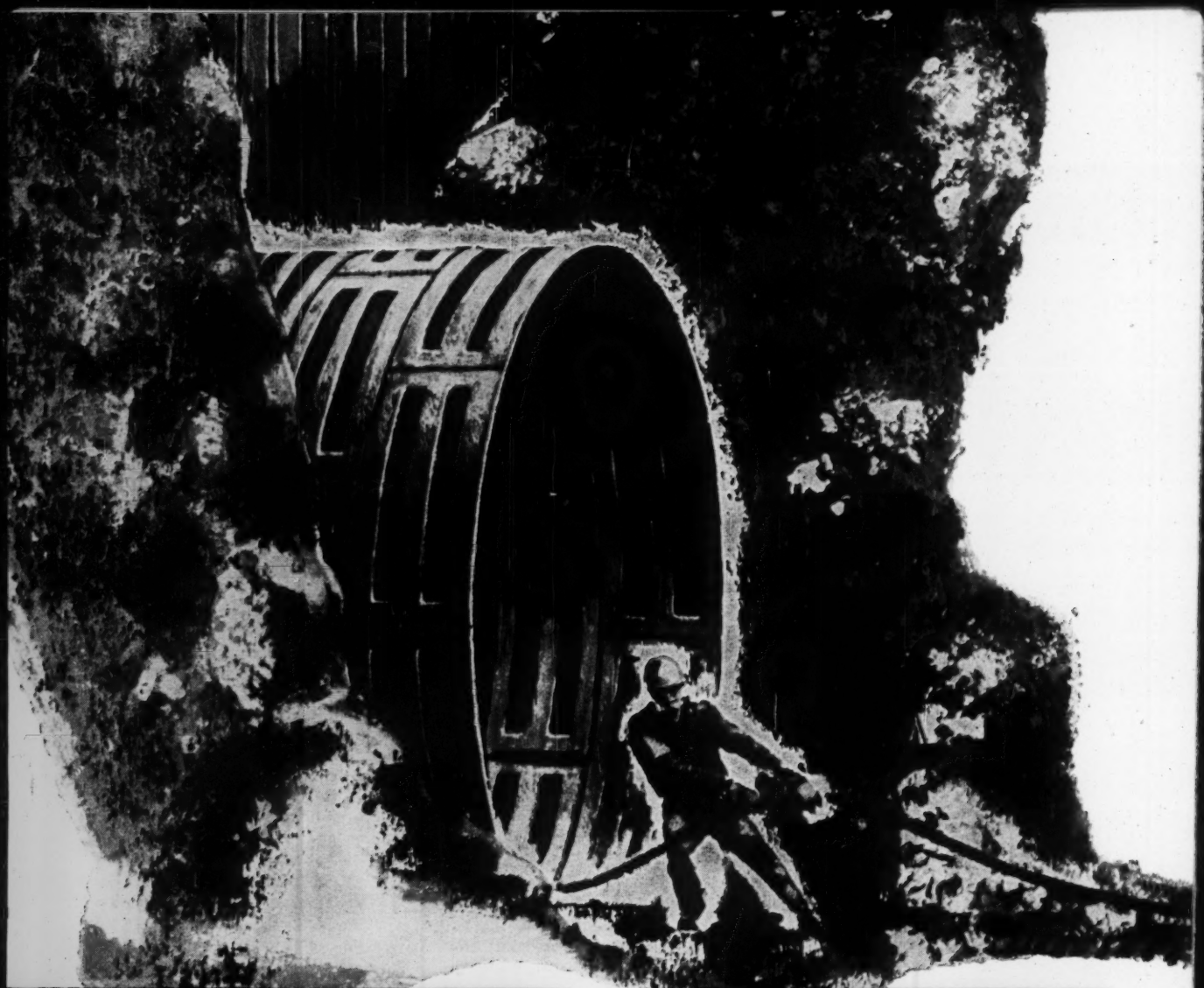
Not all estimates were higher than the low bid accepted. But where they were, the difference was small. On 13 major water main projects designed by city engineers, the contracts awarded totaled slightly under $5.2 million. The engineer's estimates placed cost at $5.1 million.

In another case a reinforced concrete pipe intake tunnel extending 1¼ miles into Lake Michigan had an estimated cost of $3.3 million. This included engineering and administrative costs. The contract went for a low bid of $3.5 million.

Arthur Rynders, waterworks superintendent, said that the over-all drop below cost estimates primarily resulted from keen competition that developed in the construction industry between the time estimates were made and bid invitations issued.

In addition, Mr. Rynders said that in some cases the consultants made their original estimates before detailed working drawings were prepared, and therefore lacked the explicit guidance that such plans provide.

The engineering and administrative costs for the entire program will come to approximately $1.2 million, according to Mr. Rynders.



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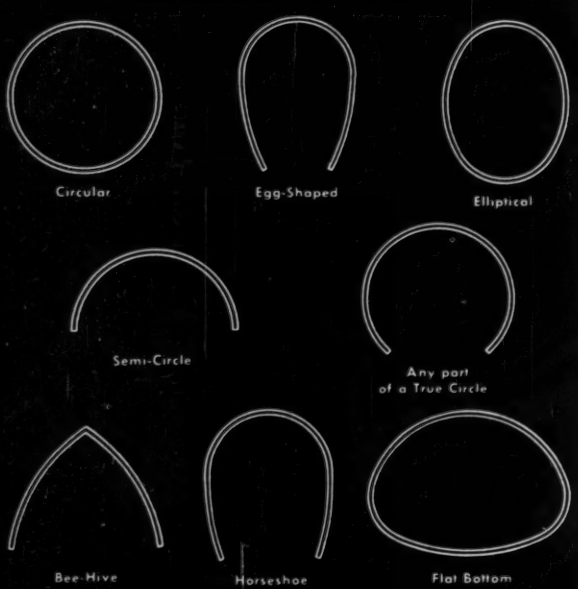

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On the Skids

Contractor failures rise to an eight-month record

Contractor failures in August rose to 217, a record for the month and 20% above one year ago, according to Dun & Bradstreet. The eight-month total of 1,685 also is a record and 24% above the first eight months of last year.

General building contractors are being hit the hardest. Failures in this group hit 91 in August, the highest for any month in more than 10 years, and 32% above one year ago. In the first eight months, 650 went under, 38% more than a year ago.

Liabilities of all general building contractors soared to $22 million in August, three times the year-ago total and the largest for any month in more than 10 years. This figure, however, is swelled by the failure of one developer in California, forced by creditors into involuntary bankruptcy with liabilities of $15 million. The eight-month total of liabilities was $70 million, 60% above a year ago.

Building subcontractors fared better. In August, 115 failed, two less than July but 12% above a year ago. During the first eight months, 930 building subcontractors went under—a 19% increase over a year ago.

Other - than - building contractors (roads, dams and other types of heavy construction contractors), are doing even better. Eleven failures were reported in August. Although this is more than in recent years, the eight-month total of 105 is one less than 1959. The liabilities total of $8.6 million during the first eight months is only 11% above a year ago, and well below the 1958 high of $9.7 million.

Kaiser Steel Denies FTC Monopoly Charges

Kaiser Steel Corp., Oakland, Calif., denies that it violated federal anti-merger statutes when it acquired a large interest in a steel fabricating company.

The Federal Trade Commission charged that Kaiser's 1958 purchase of about 45% of Allison Steel Manufacturing Co. of Phoenix, was a violation of provisions of the Clayton Act (ENR July 14, p. 131). It said the transaction tended to create a monopoly in the structural steel fabrication business in Arizona, where Allison was the largest independent fabricator. Kaiser asked for dismissal of the complaint. The case now is before a hearing examiner.

Business in Brief . . .

• **Oh, them golden fillies**—Eagle Raceway, Inc., last week filed plans with the Pennsylvania State Harness Racing Commission for an $8-million track near Eagle, Pa. It was the tenth proposal for a harness racing track received by the commission since Philadelphia and five other counties authorized parimutuel betting for trotting races. Proposed track would be near Downingtown Exchange of the Pennsylvania Turnpike. Preliminary studies are being made by George M. Ewing Co., Philadelphia architects-engineers.

• **Contract for Lummus**—SunOlin Chemical Co. will build a $20-million chemical plant at Marcus Hook, Pa., near the Sun Oil Co. refinery there. Lummus Co. of New York City has the contract. SunOlin is jointly owned by Sun Oil Co. and Olin Mathieson Chemical Corp. of New York City.

• **And that's a lot of soup**—Capital outlays during the Campbell Soup Company's fiscal year ending next July 31 will total $24 million. The Camden, N. J., company will expand domestically and abroad. Current year's estimated expenditures compare to $20 million during the fiscal year ending last July 31.

• **A vote for sports**—Voters in the Seattle metropolitan area will be asked to vote in the November elections on a $15-million bond issue to finance construction of a professional sports stadium. Stanford Research Associates made the feasibility report.

• **Small boats, big job**—Construction of a $6.2-million marina at Cabrillo Beach, was recommended to the Los Angeles Board of Harbor Commissioners by Moffatt & Nichol, Long Beach consulting engineers. Revenue bonds would be sold to finance the project.

• **Australian railroad project**—The Queensland government at Brisbane has approved a $5.2-million contract for the $70-million rehabilitation of 750 miles of Queensland Railways in North Queensland. Ford, Bacon & Davis, New York City engineering and construction firm, is supervising engineering and construction management.

• **The executive life**—Flying business men will have their own $8-million private airport in the Dallas-Ft. Worth area by the end of next year. Complete from 6,000 ft runway to restaurant and motel, the facilities there will handle 240 planes. Harkrider, Coark & Jones, Ft. Worth, are the architect-engineers. Contracts for 26 prefab steel buildings at the site have been signed by Sphere, Inc. and Tyson Steel Building Co., Ft. Worth.

• **A-power for West Coast**—An Atomic Energy Commission license for a $21 million nuclear-powered generating plant is expected to be issued to Pacific Gas & Electric Co. in about a month. Plant will be located in northern part of California at Humboldt Bay, near Eureka. Construction time is estimated at two years.

• **Contractors form association**—Associated Builders and Contractors, Inc., an open shop construction industry trade association, will get a Delaware chapter. The parent organization has 700 member firms and is headquartered in Baltimore. It has chapters in Pennsylvania, Washington, D. C., and Maryland.

• **Construction materials plant**—Portland Cement Company of Salt Lake City, Utah, and Marble Cliff Quarries Co., Columbus, Ohio, has obtained an option on 600 acres at Mentor, Ky, 20 miles from Newport, Ky., for an aggregates and cement plant. Total eventual outlays are estimated at $50 million.

• **Kentucky bonds**—Approval of a $100 million bond issue at the November election will result in $218 million worth of Kentucky highway construction from 1961 to 1963 inclusive. Of the total, $90 million would finance highways. The remainder would go for state park improvements. Federal aid would provide $160 million of the highway outlays.

• **Hurricane aid**—The Small Business Administration will loan funds for repair of property damaged by Hurricane Donna as she swept through Florida and the Keys. As damage is assessed, more disaster areas will qualify for loans.

Can Strikes Be Eliminated?

- **Secretary Mitchell thinks answer must be sought in joint discussions away from bargaining table.**
- **Experiments with that approach may point the way to fewer, smaller areas of friction and dispute.**

Labor Secretary James P. Mitchell raised the specter of compulsory arbitration again last week, when he reminded the nation that free collective bargaining is not in itself the road to labor peace.

Speaking at the international convention of the steelworkers union in Atlantic City, N. J., he urged more emphasis on the development of new labor-management approaches to common problems. He has repeatedly recommended formation of joint study and discussion groups that can operate outside the charged atmosphere of the bargaining table. He suggested last week that progress in that direction has not been fast enough.

The Mitchell idea of approaching the strike problem through better union-employer communications, however, has caught fire. And this fact, coupled with reports of a decline in strike activity, may be some assurance to pessimists that strikes can be reduced voluntarily, that collective bargaining can be kept free.

The latest note of optimism came out of the same convention, when the steelworkers union officially pledged to continue its search for "ways to end or lessen the possibility of economic strife." In adopting its Officers' Report, the union endorsed the principle that joint studies of labor problems during the life of a labor contract can "avoid crash-type negotiations over fundamental issues at bargaining time."

The steelworkers union is now engaged with management in a study of labor problems on two fronts. One is the long-range, tripartite committee at Kaiser Steel Corp., and the other is the Human Relations Research Committee established under the master labor agreement that ended the 116-day steel strike last year.

George W. Taylor, chairman of the Kaiser committee, calls the operation an experiment in "industrial self-government." After the committee's last meeting, he noted that there is more public interest in collective bargaining than there has ever been before. "We're seeking," he said, "to protect the private enterprise system and collective bargaining in order to retain in the hands of management and labor – people directly affected by these things–the rights which are theirs under our kind of economy."

Neither committee has yet reached the point of conclusions or recommendations. But the slow progress to which Mr. Mitchell referred last week is self-explanatory.

The Kaiser committee, according to Mr. Taylor, is "engaged in a task of social inventiveness. We're trying to invent a new technique as a substitute for the strike." And the art of inventing, he indicated, cannot be pushed.

The premise is that closer communications between labor and management will reduce antagonism and produce a deeper understanding of mutual problems and more attention to common interests. Out of this may come some acceptable formula for dividing the fruits of industrial progress equitably among labor, stockholders and the public. Ultimate goal, according to committee members, is to eliminate the necessity of strikes–not to eliminate the right to strike, or to destroy management prerogative or to supplant collective bargaining.

Kaiser President Edgar F. Kaiser says he is "optimistic." He feels, "we've got something here and we're going to keep it. I think we're going to find an answer to this one. It may not be perfect when we get it, but we can get something that we can start out with."

One of the big merits of the new approach, Mr. Kaiser notes, is the fact that the committee is not working under pressure, is not subjected to an atmosphere of "trading," and can look at the problems objectively.

Among the issues to which the committee has turned its attention are productivity, incentive methods, grievance procedures and the handling of problems that stem from technological changes.

The committee, which has had several subcommittees at work since last spring, is expected to hold its third meeting early this fall.

Meanwhile, Mr. McDonald has suggested formation of still another peace-promoting group, separate and apart from the "White House" Labor-Management Conference, which is still in the formative stage (ENR Aug. 11, p. 97). Last week, he gave the proposed group the name of "Continuous Prosperity Commission"–a small, select group of top union and management men who would meet periodically with the President so he would "know what is going on directly from the mouths of those intimately concerned."

All of these voluntary approaches to labor peace and public welfare are strikingly similar to the Construction Industry Joint Conference, which has been hard at work for over a year on some of the industry's most pressing common problems. The conference was established on April 7, 1959.

CIJC, too, has the elimination of strikes as one of its ultimate goals. It was contemplated at the time the conference was formed "that mutually agreed upon methods could be devised to insure uninterrupted continuity of work on all projects and contracts." It has already prepared a detailed proposal for a Joint Appeals Board to apply to all disputes not now governed by established machinery. The proposal is still in the discussion and study stage by participating unions and national contractor associations.

The CIJC, like all its varied counterparts, represents the kind of voluntary, labor-management cooperation and dispassionate exchange of ideas that Mr. Mitchell said last week are essential to real labor peace. Those close to such experiments feel they will work in time if given a fair chance.

Concurrently with these developments, strike activity has been on the decline, according to government reports, despite strikes that keep making headlines.

According to U. S. Labor Department figures, all measures of strike activity for the first half of this year were lower than for the corresponding period of 1959. Strike idleness amounted to 0.17% of estimated working time. Only 1957 and 1958 showed a lower half-year amount in all the post-war period.

In July, which is the latest month reported, the figure was 0.24%–about the same as July of last year but below the level for the month in all the years since 1951.

Use of Union 'Unfair' List Approved

Ruling of Labor Board examiner shows unions another way to soften situs picketing restrictions

The Landrum-Griffin labor law permits a union to blacklist a contractor for using nonunion subcontractors and to circulate its "unfair" list among present and potential customers of the contractor. This is true even though the contractor is technically a neutral employer, as are his customers, and even though the blacklisting may result in business losses to the contractor and to those who use him.

That is the conclusion of a National Labor Relations Board trial examiner in San Francisco. The case involved a local of the electrical workers union and the Northeastern Washington-Northern Idaho Building and Construction Trades Council.

The examiner ruled that the union activity, in the absence of strikes or picketing, is protected by the Landrum-Griffin "consumer boycott" or "publicity" clause, which is one of the exceptions to the boycott ban. That provision allows a union to publicize the fact that a neutral employer is dealing with another employer the union considers unfair, as long as the union does not picket neutral employers or cause workers of neutral employers to quit work.

If the trial examiner is right, the use of "unfair" lists gives construction unions another weapon for softening the Denver Building Trades case restrictions around which the controversial situs picketing issue is woven. (The Supreme Court ruled in the Denver case that the Taft-Hartley boycott bans prevented a building trades council from picketing and shutting down a construction job in protest against the presence of a nonunion subcontractor.) The other Landrum-Griffin "softener" is, of course, the right to bargain for a labor contract clause that prevents a contractor from using nonunion subcontractors.

The Spokane contractor who tried unsuccessfully to prevent the blacklisting in the new case was Northwestern Construction of Washington, Inc., which specializes in gasoline service station construction. It customarily sublets the electrical work, and the union council claims it has had a "tendency" to use nonunion subs. It was for this reason that the council put the contractor on its "unfair" list.

Among the firms to which the notice of listing was sent were such present and potential customers of Northwestern as Humble Oil, Phillips Petroleum, Shell Oil and Richfield.

The council admitted it hoped to persuade these firms to quit doing business with Northwestern. There was also some indication that the blacklisting might persuade union members who had gas station credit cards to quit doing business with companies that used Northwestern. There were, however, no threats of strikes, picketing or other reprisals.

In holding that the union activity was not an unfair labor practice, the trial examiner reached these conclusions:

- The blacklisting, unaccompanied by strikes or picketing, was merely "publication of a non-coercive plea or expression of opinion, reasonably calculated to persuade" others to withhold consumer patronage. It was "nothing more than speech, constitutionally protected."
- The Landrum-Griffin "publicity" clause "is effective to legitimize . . . the publication of union-sponsored unfair lists, for the purpose of truthfully advising the public, inclusive of union members or past and present customers of the business enterprise listed, that the enterprise characterized unfair had utilized the services of another enterprise involved in some primary labor dispute."

The trial examiner's opinion indicates, too, that a union may not be responsible for the chain-reaction effects of its blacklisting. Commenting on the gas station credit card aspect of the case, the examiner said that unions, like employers, can legitimately speculate "as to the possibility of future developments not shown to be subject to their control." And this, he explained, does not add up to the threats, coercion or restraints forbidden by the boycott bans.

Shorter Workweek—Why? When?

The continuing interest of various unions in a shorter workweek stood briefly under the national spotlight last week, when David McDonald's United Steelworkers of America, AFL-CIO, came out for a four-day, 32-hour workweek.

Presidential candidates John Kennedy (D., Mass.) and Richard Nixon (R., Calif.) immediately voiced their opposition, in that order.

A shorter workweek has long been talked about as a pay-saving device in the carpenters union, and two months ago the California Building and Construction Trades Council endorsed the idea.

To the steelworkers, a shorter workweek is one way of dividing up available work among all members of the work force without loss of normal pay. It is essentially a countermeasure to manpower reductions, unemployment and income losses caused by technological progress and automation.

Speaking at the steelworkers' Tenth Constitutional Convention in Atlantic City, N. J., last week, union President McDonald said that "as automation progresses, hours of work must be shortened in order to supply jobs to buy the goods" the nation produces.

He said that 150,000 of his union members are now unemployed and that another 350,000 are working less than full time. "Jobs must be found for these people," he explained, and "the first way to do it is to bring into being the four-day, 32-hour week."

Commenting on one of the economic aspects of the problem, Mr. McDonald noted that payroll reductions cannot support an expanding economy. "As you automate factories," he said, "you must remember that only human beings have purchasing power; an automated factory is of absolutely no value unless human beings can purchase the output of such an automated factory."

A shorter workweek can be achieved piecemeal through collective bargaining Mr. McDonald observed, or wholesale through changes in federal legislation. He promised to go to Congress for such a law in January.

Mr. Kennedy, pouring cold water on a shorter workweek, said we should think, instead, in terms of a full-production, full-employment economy "going ahead at such full blast that in a 40-hour week we would barely produce what we could consume."

Mr. Nixon later in the week voiced the fear that a shorter workweek would mean a reduction "in over-all productivity." He conceded that automation may eventually mean shorter working hours but said he felt the time for that has not yet come.

Labor in Brief . . .

• **Situs picketing**—The Sheet Metal Workers International Association calls situs picketing a "bread and butter" issue and cites the open-shop situation in Baltimore, Md., to prove its point. The picketing restrictions of the Denver Building Trades case, it says, have allowed subcontracting to nonunion firms to flourish, depressing both wages and working conditions.

• **Contracting out**—Members of the United Auto Workers union at Ford Motor Co. professed alarm earlier this month over the construction industry's efforts to promote construction by contract. They sounded a call to "unite and fight to protect our jobs" and to get contract clauses guaranteeing them "the work we have normally done for many years."

• **Prevailing wages**—Construction of a new high school in Warsaw, Ind., is being delayed by two union members who are seeking through court action to enjoin the sale of bonds to build the school on the grounds that wages for the school's construction were not set according to law.

• **District 50 moves ahead**—The United Mine Workers' District 50, which embraces the United Construction Workers, claims to have added "several" thousand new members to its ranks in the last two months. Listed among the firms it says it has organized during the period are a number of construction companies in Tennessee, Mississippi, West Virginia, North Carolina, Illinois, Missouri, Kentucky and California.

• **Pay boost for iron workers**—A Providence, R. I., local of the iron workers union has negotiated a 27-cent wage increase in a three-year contract with the Building Metal Fabricators Association. Increase is payable in three installments—10 cents now, 9 cents Sept. 1, 1961 and 8 cents Sept. 1, 1962.

• **Peace and progress**—Compulsory arbitration clauses in local labor agreements have given the bricklayers a relatively strike-free record, according to Harry Bates, president emeritus of the international union. On the eve of the bricklayers convention in Los Angeles last week, Mr. Bates called "harmonious relations" with employers the union's "greatest asset."

OFFICIAL PROPOSALS

Bids: January 17, 1961

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Invitation for tenders—Contract No. A 3
Akosombo Development: Construction of Dams, Power Plants and Appurtenances

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The Initial Development of the Volta River Project at Akosombo will include a rockfill dam with a maximum height of about 370 feet and volume of about 10,900,000 cubic yards; a rockfill saddle dam with a maximum height of about 120 feet and a volume of about 750,000 cubic yards; an intake structure and six 24-foot diameter penstocks; a 213 ft. rated head power plant with an installed capacity of four francis-turbine driven 128 mega watt generating units with provision for the future addition of two similar units; a spillway with 12—42x42 ft. tainter gates; a 25-foot diameter diversion tunnel approximately 1,000 feet long; and other appurtenances.

Proposed Contract

Work under Contract No. A-3 will include the construction of the above-mentioned structures, as well as the installation of generating plant and other major equipment furnished by the owner.

Site Information

The proposed development is to be located at Akosombo about 60 miles northeast of the capital city of Accra. The job site is accessible by first-class all weather roads from both Accra and the harbour of Tema, where heavy lift facilities for unloading and handling of equipment may be installed by the Contractor. Foundation investigations and preparatory construction of housing, warehousing and other facilities are presently under way. The main dam and other appurtenant structures, including the spillway, saddle dam and intake are to be ready to begin storage of water by July 1964, and the first generating unit is to be ready for commercial operation by September, 1965.

Bidding Procedure

Interested firms which have satisfactorily completed comparable projects should apply to the Consulting Engineers for the Government of Ghana:—

Kaiser Engineers and Constructors, Inc.
(Volta Project),
P. O. Box 1974,
Accra, Ghana,

or,

Kaiser Engineers and Constructors, Inc.
(Volta Project),
Kaiser Center,
300 Lake Side Drive,
Oakland 12,
California,

for copies of the contract documents; two sets of documents may be obtained by making a non-refundable payment of U. S. $50 or £G17.17.6d. Additional sets may be obtained at U. S. $25 or £G8.18.9d. each.

Pre-qualification forms will be enclosed with the documents. Bids will be received only from those contractors who, having submitted the full information required for prequalification, are subsequently selected by the Government. The determination of the Government shall be final. Bids for Contract No. A-3 will be invited on a fixed unit price basis as set forth in the Contract Documents. It is anticipated that bids will be opened on about 17th January, 1961, and the award of the Contract will be made in about April, 1961. Preliminary security of £G250,000 will be required with tenders.

Pre-qualification forms may also be obtained directly from the Consulting Engineers at Oakland, California. Completed pre-qualification forms must be submitted by interested tenderers to the Consulting Engineers at Oakland, California not later than 12 October, 1960. Tenderers will be invited on 1-3 November to visit the proposed site and view foundation exploration, including shafts, trenches and cores from bore holes. This visit will include examination of Tema Harbour facilities and the Akosombo access road. Prospective tenderers should notify the Consulting Engineers before 20 October the names of persons desiring to attend so that hotel reservations and other arrangements may be completed. Prospective visitors should obtain passport, visas and Yellow Fever immunization at least 2 weeks in advance.

A prebid meeting is planned at the office of the Consulting Engineers in Zurich, Switzerland on December 6, at which time additional information on foundation exploration will be made available to answer questions by tenderers. A written addendum will be issued to all tenderers following this meeting.

Bids: Oct. 4, 1960

RE-ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
TETERBORO AIRPORT
POLICE TRAINING FACILITY
PAVING AND UTILITIES
CONTRACT TA-290.002

Sealed proposals for construction of paving and utilities for the Police Training Facility at Teterboro Airport will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y. until 2:30 P.M. on Tuesday, October 4, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

This Contract was previously advertised on September 1, 1960.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, September 22, 1960

Bids: Oct. 27, 1960

NEW JERSEY TURNPIKE AUTHORITY 1949

New Jersey Turnpike Authority

Contract No. R-93

ADVERTISEMENT FOR PROPOSALS

Proposals are invited for Contract No. R-93 which involves the furnishing, installing and servicing for a one year period, a base-mobile two-way communication system with integrated control of sixty-seven (67) remote sign locations, all along the entire length of the New Jersey Turnpike.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Daylight Saving Time, on the morning of October 27, 1960, at which time and place said proposals will be publicly opened and read.

Contract documents may be examined during office hours on or after September 28, 1960, at the office of the Authority, and will be furnished upon payment of Ten Dollars ($10.00) for each set, not refundable.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

September 20, 1960
R-93

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

Continued on following page

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.
SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: Oct. 20, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and Canal Law Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 20th day of October, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Herkimer (Rte. 28)	R.C. 60-170	Old Forge-McKeever, SH 462	7.91	8" Cem. Conc. Pavt. 24' Wide = 7.56 Mi. Misc. Work = 0.35 Mi.	$126,000 Plans $5	$2,289,000
Oneida	M-60-11	Stony Brook Bridge E-57, East of New London	....	Cleaning & Painting Bridge	$130 Plans $5	2,600
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga & Oswego (Rte. 104)	R.C. 60-169	Red Creek-Southwest Oswego, Pt. 3, SH 8214 Red Creek-Southwest Oswego, Pt. 4, SH 8189 Red Creek-Southwest Oswego, Pts. 1 & 2 & 4, SH 5717	10.38	Asph. Conc. Type 1A Twin Conc. Box 2 Spans 30' Total	$125,000 Plans $5	2,130,000
Onondaga (Rtes. 174 & 20N)	FARC 60-165 FASS 60-15	Skaneateles-Lafayette, Pt. 2, SH 8360 Marietta-Marcellus, SH 971 Skaneateles-Marcellus, CR 41 Proj. F-470(19); F-484(4); S-521(1)	5.34 (1.36 Acc.)	Asph. Conc. Type 1A = 6.70 Mi. Incl. 16' x 7' Twin Conc. Box—20' x 9' Twin Conc. Box	$85,000 Plans $5	1,518,000
Tompkins	FASS 60-16	Peruville-McLean, CR 107 Proj. S-283(3)	3.19	Asph Conc. Type 1A	$23,000 Plans $5	411,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston & Ontario (Rte. 20A)	R.C. 60-145	Honeoye-Vincent, SH 8178 Honeoye-Hemlock, SH 191 Livonia-Ontario County Line, SH 717	5.87	Asphalt Concrete, Incl. Bridge Rehabilitation	$48,000 Plans $5	843,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie	FINTC 60-2 PSC 15216	Louisiana Street Viaduct over the N.Y.C. and Erie Railroads; Int. Rte. 506, New York State Thruway-Niagara Section (Louisiana Street Viaduct) Project I-190-1(23)74	0.39	Asph. Conc. Type 2A = 0.15 Mi.; Cem. Conc. Pavt. = 0.19 Mi.; Misc. Work = 0.05 Mi. Multiple Span Comp. Beam 825' Total	$85,000 Plans $5	1,525,000
Erie & Niagara	M 60-9	Erie Canal—Br. E-225 (Wakeman's) Br. E-242 (Pickard's)	....	Clean & Paint. 2 Bridges—Total 475± Tons	$800 Plans $2 for 2 Proposals	15,000
Niagara	PSC 6607	Elimination of Highway Railroad Crossings of the N.Y.C., Erie and Niagara Jct. Railroads in the City of Niagara Falls and Town of Niagara	3.14	Railroad Reloc. = 3.14 Mi.; Cem. Conc. Pavt. = 2.85 Mi.; Bit. Mac. = 1.99 Mi. Stab. Grav. = 0.57 Mi. 5 Hg Seps & 2 R.R. Pl. Gird. Bridges	$410,000 Plans $10	7,491,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
St. Lawrence (Rte. 37)	FARC 60-174	Ogdensburg-Morristown, Pt. 2, SH 968 Project F-FG-650(9)	1.39 (0.31 Acc.)	Asph. Conc. Type 1A = 1.37 Mi.; Misc. Work = 0.02 Mi.; Access = 0.20 Mi.; Asph. Conc. Type 1A; 0.11 Mi. Gravel; Prestressed Conc. Beam 3 Sp. 184'± Tot.	$45,000 Plans $5	788,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Orange (Rte. 42)	R.C. 60-167	Port Jervis-Sullivan County Line, Pt. 1, SH 412 Port Jervis-Sullivan County Line, Pt. 2, SH 448	5.14	Asph. Conc. Twin Reinf. Conc. Closed Box 35.8' Sep.	$53,000 Plans $5	961,000
Westchester (Rte. 22)	R.C. 60-168	Bedford-Goldens Bridge, SH 5298A Goldens Bridge-Purdy-Croton Falls, SH 5464 Peekskill-Salem Center, Pt. 2, SH 262	4.65 (2.11 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' & Var. = 4.81 Mi.; Asph. Conc. = 0.16 Mi.; Bit. D.S. Treat. = 1.79 Mi.; H.G.S. Comp. I-Beam 4 Spans 188.4' Total; H.G.S. Rigid Frame, 1 Span 40.84'; Bridge Comp. I-Beam, 2 Spans 110.7' Total	$245,000 Plans $5	4,444,000
DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rtes. 26 & 17C)	FARC 60-177	Vestal-Vestal Center-Choconut, SH 8331 Vestal, SH 420 Union Village: Main and Bridge Sts., SH 5412 Endicott, SH 174 Project U-UG-482(3)	1.49 (4.24 Acc.)	9" Cem. Conc. Pavt., 2 @ 24' & Var. = 1.47 Mi. Misc. Work = 0.02 Mi.; Access = 1.65 Mi. Cem. Conc. Pavt.; 0.69 Mi. Cem. Conc. Pavt. with Carbon Black; 1.85 Mi. Asph. Conc.; 0.05 Mi. Asph. Conc. Type 2B Hy. R.R. Gr. Sep. Comp. I-Beam, 5 Sp. 300.3' Total Repairs to Exist. Bridge over D.L. & W.R.R. H.G.S., Comp. I-Beam, 4 Sp. 207.5' Total; Bridge-Welded Pl. Gird., 7 Sp. 991' Total; H.G.S. Comp.-I-Beam & Gird. 3 Sp. 170' Total	$320,000 Plans $10	5,771,000
Broome (Rte. 11)	R.C. 60-173	Castle Creek, SH 267	0.52	Asph. Conc. Type 1A = 0.52 Mi. Bridge Comp. I-Beam 33' Span	$8,500 Plans $5	155,000
Broome (Rte. 26)	R.C. 60-171	Maine, SH 374	0.35	Asph. Conc. Type 1A, Incl. Prestressed Beam Bridge—64.6' Sp.	$8,000 Plans $5	145,000
Broome (Rte. 26)	R.C. 60-172	Maine, SH 374 Maine-Glen Aubrey, SH 1449	0.23	Asph. Conc. Type 1A = 0.23 Mi. Incl. Conc. Slab Bridge, 25.5' Span	$4,800 Plans $5	86,000
Sullivan (Rte. 17)	R.C. 60-176	Liberty-County Line Pt. 2, SH 5234	0.18	Asph. Conc. Type 1A, Incl. Comp. I-Beam Bridge 113' Span	$11,000 Plans $5	197,000
DISTRICT No. 10, AUSTIN M. SARB, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Trg. Rte. 95)	FICBE 60-4	Interstate Route Conn. 511 Cross Bronx Expressway Cont. 4 (Plimpton Ave. to Walton Ave.) Project EI-95-1(44)2	0.53 (1.16 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 37' Wide and Var. = 0.50 Mi.; Misc. Work = 0.03 Mi.; Access = 0.44 Mi. Cem. Conc. Pavt.; 0.57 Mi. Asph. Conc. Pavt. 0.15 Mi. Misc. Work; H.G.S. Comp. Gird. 3 Sp., 224.8' Total; H.G.S. Conc. T-Beam 2 Span & Comp. Gird. 1 Span 188.2' Total; H.G.S. Conc. Frame 2 Span 115.2' Total; Hwy. RRg. S. Conc. & Steel Frame, 2 Span Plate Girder, 2 Span Conc. Frame 1 Span 396.7' Total	$575,000 Plans $10	10,439,000
Bronx (Int. Trg. Rte. 278)	FIASE 60-1	Int. Rte. Conn. 517 Arthur V. Sheridan Expressway Cont. 2 (Lowell Street to East Tremont Avenue) Project EI-278-1(45)	0.98 (1.39 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 36' Wide and Var. = 1.30 Mi.; Asph. Conc. Pavt. = 0.68 Mi. Grading = 0.39 Mi.; H.G.S. Pl. Gird. Comp. I-Beam 2 Sp., 131' Total; Viaduct Comp. I-Beam, 8 Span, 595' Tot.; Viaduct Steel Beam, 9 Sp. 445.8' Total; 2 Ped. Ramps, Comp. I-Beams, 8 Sp. 534' Total	$308,000 Plans $10	5,594,000
Kings (Int. Trg. Rte. 278)	FIGE 60-3	Interstate Route Connection 512 Gowanus Expressway, Cont. 2 (Hamilton Ave., Clinton St. to Second Avenue) Project EI-278-1(54)15	0.61 (0.57 Acc.)	7½" Reinf. Conc. Slab Roadway (on Viaduct) = 0.56 Mi.; Misc. Work = 0.05 Mi.; Sheet Asph. Pavt. (St. Repairs) = 0.57; Widen and Strengthen Exist. Elevated Steel Structure, 33 Spans = 294.6' Total	$600,000 Plans $5	10,378,000
Suffolk	FALIE 60-3	Long Island Expressway, Cont. 11 (Deer Park Ave. to Commack Rd.) Project U-862(28)	2.67 (3.43 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 36'=2.56 Mi.; Misc. Work = 0.11 Mi.; Access = 0.80 Mi. Cem. Conc. Pavt; 2.63 Mi. Asph. Conc. Pavt.; H.G.S. Comp. WF Beam, 4 Span 226.6' Total; H.G.S. Double Struct. Comp. WF. Beam 3 Span 128.4' Total	$200,000 Plans $5	3,710,000
Suffolk	HSPTS 60-2	Hecksher State Parkway, Cont. No. 4 Sunrise Highway to Hecksher State Park	6.27 (4.43 Acc.)	Traffic Signs	$1,800 Plans $5	32,000

(Continued on opposite page)

OFFICIAL PROPOSALS

(Continued from opposite page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids Oct. 20, 1960

Advertisement for the Construction Bids for the Livonia Drain No. 2 in the City of Livonia, Wayne County, Michigan

1. RECEIPT OF BIDS

The Drainage Board for Livonia Drain No. 2 will receive sealed bids until 11.00 A.M., Eastern Standard Time, October 20, 1960 at the Board of Wayne County Auditor's Board Room No. 1222, City-County Building, Detroit, Michigan, at which time and place all bids will be publicly opened and read.

2. DESCRIPTION OF WORK

7550 feet of 16'-4" x 12'-0" monolithic concrete arch together with outlet structures and miscellaneous sewer relocations, connections, man-holes, catch basins, junctions, etc.

3. PLANS AND SPECIFICATIONS

Plans and specifications are on file and copies may be secured at the office of the Wayne County Drain Commissioner, 3523 Cadillac Tower, Detroit 26, Michigan. A deposit of Twenty-five Dollars ($25,00), *Check Only*, will be required on each set of plans, which will be refunded upon their return in good order within ten (10) days after the opening of bids.

4. BID BOND

A certified check or bank draft payable to the Drainage Board Livonia Drain No. 2 or a satisfactory bid bond executed by the bidder and a surety company, in an amount equal to Five Per Cent (5%) of the bid, shall be submitted with each bid. No bid may be withdrawn for at least One Hundred Fifty (150) days after the schedule closing time for receiving bids.

5. AWARD OF CONTRACT

The Drainage Board reserves the right to reject any or all bids, to award the work by sections, and to waive any irregularities in bidding. The successful bidder will be required to furnish satisfactory performance, labor and material bonds, and insurance certificates.

HENRY V. HERRICK
Wayne County Drain Commissioner
Chairman, Drainage Board
Livonia Drain No. 2

Bids: Nov. 30, 1960

Republic of Pakistan West Pakistan Water and Power Development Authority Construction of Two Barrages (Diversion Dams) on the Rivers Sutlej and Ravi in West Pakistan

NOTICE TO CIVIL ENGINEERING CONTRACTORS

The West Pakistan Water and Power Development Authority is proposing to construct two barrages:

i. Mailsi Barrage on the River Sutlej near the town of Mailsi, and
ii. Sidhnai Barrage on the River Ravi near the town of Abdul Hakim.

Both the Barrages are to be completed by April 1965.

The works form part of the Settlement Plan being financed by the Indus Basin Development Fund, which is administered by the International Bank for Reconstruction and Development.

Civil Engineering Contractors of International repute, who are interested in tendering for the construction of these barrages including the gates to be installed therein, are hereby invited to apply in writing at once but not later than November 30, 1960 to:

The Chief Engineer (Water)
West Pakistan Water & Power Development Authority
The Pipals, Lower Mall,
Lahore.

with a copy to the Consulting Engineers:
Messrs Coode & Partners,
2, Victoria Street,
London, S.W.1.

Further particulars about the barrages can be obtained from either the Authority or the Consulting Engineers by October 31, 1960.

The intending contractors should give details of their resources, their experience in the construction of barrages or other similar works working alone and not in association with other Contractors, with the value and description of each project which they have carried out, time of construction and the names of the Employers and the Consulting Engineers responsible.

The Authority expects to issue the tender documents for each barrage by January 1961 to those firms, who are considered to have sufficient experience and resources.

Bids: November 22, 1960

Philadelphia, Penna. Procurement Department Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2.30 P.M. (E.S.T.) on Tuesday, November 22, 1960, and opened at that time, for Bid No. 2632—Work No. S-2775-R.

Reconstruction of Mill Creek Sewer in its Present Location in Forty Sixth Street from 33' + N. of Market Street to Haverford Avenue and in Right of Way N.W. of Forty Sixth Street and Haverford Avenue from Haverford Avenue to 120' + N.W.

PRINCIPAL ITEMS OF WORK

Excavation	34,100 cu. yds.
17'0" high X 18'0" wide, circular arch, reinforced concrete sewer with stone block invert	1,617 lin. ft.
Brick Manholes	3
Wellholes	2
Concrete Paving Base	1,600 cu. yds.
Asphalt Paving	7,000 cu. yds.

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 3, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1113 City Hall Annex, at least one (1) week prior to the date of opening of bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

Michael H. Sura, Commissioner.

Bids: Oct. 14, 1960

BOARD OF EDUCATION—BUREAU OF CONSTRUCTION

Notice Re: Prequalification Forms for Contractors
APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT The Deputy Superintendent of Schools, Office of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts. For the General Construction, Plumbing and Drainage, Heating and Ventilating, Electrical Work and Lighting Fixtures of: New Dorp High School. (Add. & Mod.) Clawson Street between Lindbergh and Allison Avenues. Borough of Richmond.

The prequalification application form must be secured at the Office of School Buildings, Bureau of Construction, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y., and submitted to the Deputy Superintendent of Schools, at the same above address.

Bids, when advertised, will be received only from prequalified bidders.

The time for submitting prequalification applications by contractors will expire on Friday, October 14, 1960.

JOSEPH R. WEISS
Deputy Superintendent of Schools
Dated: September 21, 1960

Bids: Oct. 17, 1960

ADVERTISEMENT
Bids: October, 17, 1960
CLEANING, REFINISHING, OXIDIZING AND MAINTAINING BRONZE
PORT AUTHORITY BUILDING AND NEW YORK UNION MOTOR TRUCK TERMINAL
CONTRACT O&M-613
THE PORT OF NEW YORK AUTHORITY
PROPOSAL NO. 1786

Sealed proposals for furnishing all labor, material and equipment necessary for cleaning, refinishing, oxidizing and maintaining interior and exterior bronze at the Port Authority Building, 111 Eighth Avenue, New York City, New York and the New York Union Motor Truck Terminal, 325 Spring Street, New York City, New York, will be received at the office of the Director of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. (D.S.T.), on Monday, October 17, 1960 at which time and place said proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase and Administrative Services.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

Bids: November 15, 1960

The Pennsylvania Railroad Company

Contract No. 3—Demolition and Removal of Pier 2 and Fenders of Delair Bridge No. 2.07 over Delaware River, Philadelphia, Pa.

Notice to Contractors:

Sealed proposals for the demolition and removal of Pier 2 and Fenders of the railroad bridge between Philadelphia, Pa. and Delair, N. J., will be received at the office of the Assistant Chief Engineer-Construction, Room 1640, Transportation Center, Number Six Penn Center Plaza, Philadelphia 4, Pa., until 2:00 P.M. on November 15, 1960 at which time said proposals will be opened and publicly read.

Contract documents may be seen at the above mentioned office on and after September 21st, 1960. Documents will be furnished upon deposit of $10.00 per set for not more than three sets to any one company. Deposit is returnable only to bidders who return the documents in good order within one week after the opening of proposals.

THE PENNSYLVANIA RAILROAD COMPANY
J. F. Piper
Assistant Chief Engineer-Construction

OFFICIAL PROPOSALS

Bids: Oct. 6, 1960

Water Mains, Elizabeth River Elizabeth, New Jersey

NOTICE TO CONTRACTORS

NOTICE is hereby given that sealed Proposals for the construction of 16-inch Water Mains under the Elizabeth River on South Front Street, Elizabeth, New Jersey, will be received by the Board of Water Commissioners of Elizabeth, New Jersey, at a meeting to be held in the Offices of the Board of Water Commissioners at the City Hall at 10 A. M., on October 6, 1960, and then publicly opened and read. No proposal will be accepted after said hour.

Proposal forms, specimen Contract, Plans, Specifications and other pertinent Contract Documents for the foregoing contract may be examined at the office of Henry Kreh, Jr., Consulting Engineer, 433 N. Broad St., Elizabeth, N. J., and at the office of the Board of Water Commissioners, City Hall, Elizabeth, N. J., between the hours of 10 A.M. and 4 P.M. daily except Saturdays, Sundays and holidays and there obtained upon making a deposit of Twenty ($20.00) dollars, which will be refunded to bidders within thirty (30) days after the proposals are opened and upon return of the data undamaged. Half of this deposit will be refunded to non-bidders.

Extra copies of specifications may be obtained at the cost of Ten ($10.00) dollars each and extra sheets may be obtained at the cost of One ($1.00) dollar each which sums will not be refunded.

No proposal will be considered unless accompanied by a Bid Bond of a corporation acceptable to the Board of Water Commissioners, or a cashier's check or a certified check upon some good and acceptable bank, in the penal sum of 10% of the total amount of the bid as a guarantee that if the contract upon which the bidder has bid shall be awarded to said bidder, he will enter into a contract for the work and do so within the time stipulated in his Proposal for said work and failing to do so the bidder and surety shall forfeit to the Board of Water Commissioners of Elizabeth, New Jersey, the amount of said Bid Bond or check. The Bid Bond shall be executed by the bidder and surety company on the form set forth in the Specifications.

The bidder to whom the contract is awarded shall furnish a Performance Bond on a surety company duly licensed in the State of New Jersey, in the sum of 100 per cent of the amount of the contract, conditioned upon the faithful performance of the terms of the contract.

The successful bidder will be required to comply with all State Laws governing the execution of Municipal contracts in the State of New Jersey.

The Board of Water Commissioners of Elizabeth, N. J., reserves the right to reject any and all bids as it may deem best for the interests of the Board of Water Commissioners of Elizabeth, N. J., and to waive any informality in any bid.

Proposals with completion dates later than January 31st, 1961 will be rejected.

BY DIRECTION OF THE
BOARD OF WATER COMMISSIONERS OF ELIZABETH, NEW JERSEY.

Dated: Sept. 15, 1960

Edward L. Whelan, Pres.
Nathan R. Leavitt
Daniel J. O'Hara
Adrian O. Murray

Attest:
William J. Haggerty
Clerk of Board.

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: Oct. 18, 1960

General Construction of CHA Project Illinois 2-37, Stage II Chicago, Ill.

The Chicago Housing Authority invites properly qualified bidders to submit proposals for all labor and material required to complete the General Construction of CHA Project Illinois 2-37, Stage II. The work includes eight 16-story elevator-type apartment buildings containing 1,264 dwelling units, underground utilities and related site improvements, all in the general area bounded by West 43rd Street, South State Street, West 47th Street and the railroad right-of-way west of South Federal Street. Bids will be received until 2:00 P.M. (local time) on October 18, 1960, by mail or by hand in Room 1500 of the Chicago Housing Authority, 608 South Dearborn Street, Chicago 5, Illinois, immediately after which time and at such place all bids will be publicly opened and read aloud.

Bid documents including plans and specifications may be obtained on or after September 20, 1960 by depositing $75.00 in the form of cashier's check, certified check or telegraphic or postal money order with Shaw, Metz and Associates, Architects and Engineers, 208 South LaSalle Street, Chicago 4, Illinois.

OFFICIAL PROPOSALS

Bids: Nov. 3, 1960

Sealed bids for construction of Federal Office Building No. 8, Washington, D. C., will be received until 2:00 PM, EST, November 3, 1960, in Rm. 7122, GSA Regional Office Building, 7th & D Sts., S. W., Washington, D. C., and then publicly opened in Rm. 3019 at the above address. Upon request Public Buildings Service, Rm. 1308, GSA Bldg., 19th & F Sts., N. W., Washington 25, D. C., Phone EXecutive 3-4900, Ext. 2397, will furnish three sets of bidding material to General Contractors interested in bidding the complete project. Three Additional sets may be obtained by depositing $150.00 per set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount of $150.00. Deposits will be refunded for such sets if returned in good condition within twenty days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builder's exchanges, chambers of commerce and other similar organizations with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings, General Services Administration.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

OCTOBER 13TH ISSUE CLOSES OCTOBER 3RD

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• *POSITIONS VACANT*

Field Supervisor. Large established midwest consulting firm has permanent position in building construction supervision for thoroughly qualified and experienced man. Mechanical engineer preferred. Moving expenses paid. Send complete resume to P-4833, Engineering News-Record.

Draftsmen, Structural-Experienced checkers and detailers of structural steel shop drawings. Permanent position. Fink and Zwecker Co., 1100 Crescent Ave., N.E., Atlanta 9, Ga.

Project Engineer for large Capehart Housing Project in Missouri. Age to 35. Please send resume and salary requirements to P-5270, Engineering News-Record.

Plant superintendent required—experienced in prestressed precast concrete. Steady employment. Fenrich Prestressed Concrete, 1-340-58 Ave., Edmonton, Alberta, Canada.

Permanent Position: Structural engineer with Ph.D. or M.S. degree from well recognized engineering school. Well grounded in the Theory of Elasticity to handle complex indeterminate structures. Excellent living conditions, good future for young and responsible engineer. Submit Graduate School credits. Location North Carolina. P-5231, Engineering News-Record.

Estimator—Engineer; Progressive, Expanding commercial and industrial building contractor in Louisville, Ky. Requires young man with growth potential. Two years minimum experience. Grow with the South. Replies held strictly confidential. Our employees know of this ad. Write brief resume, salary expected, and availability to P-5323, Engineering News-Record.

• *POSITIONS VACANT*

Sales Engineer for wellpoint dewatering in various sections of the country. Engineering background, civil preferred. Alternate at least 5 years experience in supervisory capacity in heavy construction work. Excellent opportunity. State age, education experience, marital status. P-5241, Engineering News-Record.

Project Superintendent for large Capehart Housing Project in Missouri. This position requires a man of outstanding organizational and supervisory ability. Please send resume and salary requirements to P-5281, Engineering News-Record.

Assistant To City Engineer. Salary to $6,588. Fringe benefits. Opportunity for varied design and construction experience. Large city planning, street, sewer and expressway programs under way. Write City Manager, Zanesville, Ohio before November 1.

Permanent position open for civil engineer with 5 to 10 years general experience in municipal engineering. Must have substantial experience in water and sanitary engineering fields, including treatment works. Salary open. Age limit 40 years. Reply to Parker and Associates, Consulting Engineers, 1714 9th Street, Greeley, Colorado.

Sanitary Engineers (a) Over 10 years experience design water supply, sewerage, drainage (b) 5-10 years experience same field. Salaries open depending upon qualifications. Clinton Bogert Engineers, 145 East 32nd Street, New York City.

Sewer Superintendent—Kansas City Area. Long Established Contractor has permanent opening for experienced qualified man. Age no barrier. Must be able to produce. P-5315, Engineering News-Record.

Soils Engineer—M.S. degree in soils mechanics. Registered engineer under 35 years of age, location—Midwest. U. S. Citizen. P-5367, Engineering News-Record.

(Continued on page 76)

CHIEF ESTIMATOR

HEAVY CONSTRUCTION

IMMEDIATE OPENING

YOUNG, rapidly expanding ($70 million in active contracts) nationwide construction company wishes to discuss your qualifications if you have substantial, successful experience as Chief Estimator on varied competitively bid complex work involving bridges, dock construction, locks and dams, etc., and seek greater future opportunities with growing firm.

An exceptional opportunity to offer a top-flight man now.

Mail complete and confidential resume to:

P-5245, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

PROJECT SUPERINTENDENT

STEAM ELECTRIC STATION, OVERSEAS

To supervise construction and start-up of 50,000 kw station in Far East. Heavy power plant construction experience required at some level of responsibility. ME or EE university degree preferred. Local living allowance and family accommodation. Two year minimum field tour starts about March 1, 1961 preceded by 2-4 months assignment in N. Y. design office. This is a responsible position with a reputable consulting firm. Send complete resume and references to

P-5308, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED

BUSINESS PARTNER as EXECUTIVE Vice-President and General Manager

Consulting Engineering and General Contracting Group

World Wide Contacts
Foreign and Domestic Projects

Sales experience Essential

Minimum investment $50,000.00

Annual income should equal investment
Send complete resume first letter

P-4350—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

MATERIALS ENGINEERS

Eastern Consultant wants several graduate engineers well rounded in highway materials control, including knowledge of highway construction, in several grades. Minimum age 33 years. Salary ranges $8,500 to $10,500 and $10,500 to $12,000 depending on age & experience.

P-5250, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ELECTRICAL ENGINEER

TOLL COLLECTION EQUIPMENT SUPERVISOR

Consulting Engineer seeking applicants for permanent position • department head status, for major toll facility. Position includes responsible charge of operational procedures and maintenance of electronic toll collection equipment including dynamic weighers, axle counter relays, I.B.M. console equipment and remote recorders.

Prefer Graduate Electrical Engineer with basic power and electronic background. Require experience, low voltage relay circuits, electronics and allied fields and demonstrated administrative ability with special aptitude for public service.

Salary open.

Apply in writing with complete resume of experience and background.

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERS
P.O. Box 111
Rochester, Pennsylvania

ARCHITECTS

Permanent positions in our St. Louis office for graduate Architects or equivalent experience. Prefer men who have had experience as job captain for the design of industrial and institutional type buildings. Architectural services include preparation of both preliminary and final architectural designs, plans perspective and renderings.

SPECIFICATION WRITER

Permanent position in our Architectural Section for an experienced person for the preparation of specifications and cost estimates.

Positions offer long range employment with opportunity for professional development. Many company benefits including paid vacation, sick leave, holidays. Excellent retirement plan.

Submit complete resume include salary data.

SVERDRUP & PARCEL ENGINEERING COMPANY
Engineers—Architects
915 Olive Street, St. Louis 1, Mo.

HIGHWAY CONSTRUCTION ENGINEERS

For Work in Southeast Asia

Senior personnel needed to complete technical party. Work involves supervision of construction of highways and bridges in South Vietnam. Duties include instruction of on-the-job trainees. High degree of initiative, judgment and skill in handling human relations required in addition to professional competence. Twenty-four months minimum employment agreement. Only those interested in difficult and challenging work should apply.

Minimum 10 years experience desirable on construction supervision of highways. Civil Engineering Degree and/or professional registration required. Age limit 65 years. Travel in Bachelor Status only.

For application blank write to

CAPITOL ENGINEERING CORPORATION
CONSULTING ENGINEERS
DILLSBURG, PENNSYLVANIA

ESTIMATOR

Excellent opportunity for a man with experience in estimating construction and remodeling work. Must be a graduate engineer and a registered Professional Engineer. Should have at least 12 years experience in estimating all types of work, with a working knowledge of unit costs in the general construction trades and in the mechanical and electrical fields. Excellent retirement and insurance benefits. All replies held confidential. Send resume, including academic background, positions held, references, and salary requirements to Mr. L. C. Stephens, Personnel Department, Ohio State University, 190 N. Oval Drive, Columbus 10, Ohio.

ENGINEER-EXPEDITOR

Established General Contractor, Cleveland, Ohio has opening in Building Department for Expeditor with Civil or Architectural Background. Age 25-40, with at least 5 years field experience. Submit resume, availability and salary requirements to

P-5311, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

Hydraulic Dredging Manager

Capable of estimating, obtaining work, and supervising operations. Reply to

P-5307, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ENGINEERS DESIGNERS

Permanent positions with Arthur G. McKee & Company in Cleveland for:

ENGINEERS, DESIGNERS, DRAFTSMEN

experienced in design work on Oil Refineries, Chemical Plants, Heavy Industry or any type of Steel Plant or Steel Plant Equipment design. Applications will be kept confidential.

Send detailed resume and photo to:

G. VICTOR HOPKINS
ARTHUR G. McKEE & COMPANY
2300 Chester Avenue, Cleveland 1, Ohio

structural steel estimator

For permanent position in estimating department of well established structural steel fabricator and erector located in the Philadelphia, Pennsylvania area. Must have experience in structural steel estimating. Send full resume of experience and salary expected to:

P-5299, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SOILS AND MATERIAL ENGINEER

Consulting engineering firm with international reputation located in Midwest wants man with 5 to 10 years experience. Work divided between design office and field. Capable of preparing specifications and drawings for all phases of soils and foundation work.

CONCRETE ENGINEER

Also wants concrete engineer and technician with 5 to 10 years experience, capable of preparing specifications and directing start of mixing operations on large projects. Should be capable of acting as trouble shooter on aggregate and cement problems. Send detailed resume, including salary requirements to

P-5358, Engineering News-Record
520 No. Michigan Avenue, Chicago 11, Ill.

• POSITIONS VACANT

(Continued from page 74)

Water Manager: City of 12,000 requires a Water Manager who should be a graduate engineer with at least three years experience including one in utility management. Appropriate experience may be acceptable in lieu of college degree. Water system includes wells, pumping stations, tanks, and distribution mains. Salary commensurate with ability and experience to $7,200 maximum plus benefits. Director of Public Works, Cambridge, Maryland.

Project Soil Engineer: Location New Jersey, permanent position with nationwide consultant, M.S.C.E. with P.E. license and 2 to 5 years practical experience in soil mechanics required, submit resume to P-5368, Engineering News-Record.

Engineer (Civil, Mechanical or Geological) P.E. desirable. Excellent opportunity for aggressive engineer to grow with an expanding eastern drilling contractor. Design and sales engineering, municipal and industrial water wells, water and sewage treatment and pumping tests. P-5349, Engineering News-Record.

Hydro Design Engineers—Permanent Openings for Electrical Engineers and Mechanical Engineers experienced in the design of hydroelectric projects. Prefer graduate registered engineers with 4 to 10 years experience. Career opportunities in Denver office of growing organization with excellent employee benefit program. Mail resume to Engineering Consultants, Inc., 1901 South Navajo Street, Denver 23, Colorado.

Engineer wanted who is familiar with prestressed concrete. This position offers opportunity on supervisory level of all phases of manufacturing process including field work. P-5352, Engineering News-Record.

Director of Specifications Department. Large Midwest consulting firm has immediate opening for capable individual with broad experience in specification writing for all branches of building construction work. Must also possess administrative ability. Send complete resume of educational background and experience, including personal qualifications and small photograph to P-5347, Engineering News-Record.

Design Engineer—Highways, bridges, buildings. Permanent. 1 year allied experience. Submit resume to A. J. Macchi, Engineers, 44 Gillett St., Hartford, Connecticut.

Transitman—Chief of Party. Minimum eight years experience in Boundary Surveys, Highway Curves and Earthwork, Topography. Must be familiar with all computations in connection with the above. Drafting and Mapping experience essential. South Central Virginia location. Permanent. Reply stating age, telephone number with complete details and salary expected. P-5334, Engineering News-Record.

Chief Plant Engineer—to direct the engineering and mechanical operations of a state psychiatric facility with an on-going building program, located in a suburb south of Denver. Degree in Mechanical Engineering desirable plus extensive experience in operation of a large physical plant, including heating and related distribution and mechanical systems. Salary $598-$764, with a possible hiring rate to $660 per month. Excellent retirement, leave and other benefits. Mr. F. C. Engelman, Administrator, Ft. Logan Mental Health Center, Box 188, Ft. Logan, Colorado.

• POSITIONS WANTED

Chief Estimator-Project Manager — Fully qualified to handle work from bidding stage to completion. Best of references. Building Construction, Heavy Construction, Sewage and Water Treatment Plants PW-5011, Engineering News-Record.

Engineering Executive. Wide industrial, chemical and civil experience; all phases administration and management. Organize and direct large design jobs or work in consulting and exec. asst. capacities. Proposals, reports, contracts, liaison, trouble shooting, P.E. in 5 States. PW-4725, Engineering News-Record.

Construction Engineer, Contract Administrator—BSCE—age 25—four years experience in engineering construction—supervision, inspection, contract administration—prefer foreign assignment—military obligations completed—available 1 November. PW-5163, Engineering News-Record.

Structural Engineer—Graduate, Registered, 8 years experience fabrication and design structural steel desires responsible position with fabricator. PW-5202, Eng. News-Record.

Superintendent-Engineer, experienced in strip mining and earth moving. Now employed, available soon. PW-5262, Eng. News-Record.

General Manager; 41 yrs. old. Fully experienced in all phases of Heavy, Highway, and Airport Construction business. Prefer west of Mississippi River. References. Available for interview. R. E. Phillips, 512 Conkey, Burlington, Wis. Ph. Rockwell 3-7549.

Project Management, Contract Admin. 22 yrs. hvy. constr. including estimating, procedures, supervision, claims. Major projects U. S. & O. S. PW-5263, Eng. News-Record.

Manager of Construction—twenty-five years corporate engineer in charge of profitability analysis, cost estimating, scheduling, construction supervision and cost control for major process industry projects. On-time completions, minimum costs, smooth startups. PW-5267, Engineering News-Record.

Project Manager—Const Supt. Flood Control, Roads, Tunnels, Bldgs. Excellent Mechanical Background, Immediately available, 9238 E. Parkhill Drive, Bethesda 14, Md. 01 2-6196.

Assistant Superintendent: Over 10 yrs. in supervisory capacity on Industrial Bldgs., Hospitals & Super Highways. Field lay-out & proj. engineering background. J. T. Hock, 808 W. Walnut, Robinson, Ill., Phone 973-WX.

Gen Supt. or Supt.—35 years experience— Major project-heavy constr. West Pointer. At present employed on one of the Niagara Power Project as, Gen Supt., desire change. My experience cover thorough work on, dams (both earthfill hydro), bridges, Pile Driving, Mass earth and Rock excavation, (including drilling and blasting) Waterworks, Docks, Cuffer Dams, Foundation, Mass Concrete; Pumpcrete, form work, Tunnels, Rigging. Expert organizer. Resume on request. PW-5317, Engineering News-Record.

Project Manager or Superintendent. BSME Reg. Eng. Md. Age 45. Experience: Bridges, Tunnels, Pipe lines, Pumping Stations, Piers, Jetties, Bulkheads, Hydraulic fills, and dredging. Handle projects from bidding to completion. PW-5326, Engineering News-Record.

Construction Supt. General Construction. PW-4482, Engineering News-Record.

• POSITIONS WANTED

Former consultant, 56, highly productive, ample capital, seeks association with established engineering organization N. Y. City area. PW-5232, Engineering News-Record.

Dredge General Superintendent. BSME. Reg. Eng. 20 years' experience. Handle job from bidding to completion. Design and build all types dredging equipment. PW-5370, Engineering News-Record.

Structural Engineer. PE, 12 years well rounded experience in design, construction, and administration of concrete and steel commercial, industrial, apartment, and institutional buildings seeks engineering administrative position with medium-sized engineering or building firm in East. Currently employed, will relocate. PW-5366, Engineering News-Record.

Construction Superintendent—industrial experience—Mid Atlantic preferred. PW-5362, Engineering News-Record.

Chief Estimator—Engineer. 12 years experience commercial, industrial, heavy construction. Capable of handling jobs from takeoff to completion. Presently employed but willing to relocate. PW-5364, Engineering News-Record.

General Supt.—Long record of profitable results with own forces and subs. Engineering background. Late forties. Attitude and personality geared to a cost conscious, on schedule technique of field and office management. Top level responsibility desired. PW-5374, Engineering News-Record.

Engineer MSCE, PE, 8 years consulting experience. 2 years as project manager. Familiar with all phases commercial and industrial design. Desire responsible position with A-E or manufacturing firm. PW-5335, Engineering News-Record.

P.E. (civil), 34, A.E. trained wife, 4 kids seek assign. as secular, technical-cultural missionaries to have-not country. Require travel expenses and local economy equiv. $10,000 p.a. Reply PW-5319, Engineering News-Record.

Sales: Heavy construction materials to architects, engineers, contractors, industry, municipalities. Arch. grad.; 15 yrs. exper. PW-5341, Engineering News-Record.

Chief Engineer, age 38, graduate C.E.; 17 years varied industrial, heavy defense, public works, construction experience. 12 years concurrent teaching and Department Chairman Engineering School. Executive position desired. New York area or West Coast. Registered N. Y. and N. J. PW-5340, Engineering New-Record.

Management Engineer—Graduate, registered engineer 30 years old with 7 years successful experience in construction, maintenance, design and plant operations. Currently in works management over 1500 employees. Seeks job as trouble shooter or assistant manager U.S. or foreign. PW-5265, Engineering News- Record.

SELLING OPPORTUNITY WANTED

Construction Product Sales? Need representation east of the Mississippi? Two or more graduate engineers with sales and management background available for challenging assignment. Promotion and/or sales to all applicable markets. Replies on your letterhead promptly answered. RA-5286, Engineering News-Record.

SEARCHLIGHT SECTION

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The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

CONSTRUCTION SUPERVISION

Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.

National Schools of Construction
Est. 1952
Satsuma, Florida

BUSINESS OPPORTUNITY

Engineering Corporation for sale. N.Y. State charter available. Principals only. BO-5376, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

WANTED

4000 used screw jacks

for 4x4 props.
Good condition.

W-5379, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Economy Forms

Miscellaneous sizes. Purchase Price $30,000.00. Owned by Joint Venture. Used on one project. Stored in Bridgeport, Conn.

CAMPANELLA & CARDI CONST. CO.
780 Jefferson Blvd., Warwick, R. I.
Tel: Regent 7-1300

NORTHWEST 80D Shovel

In Our Yard Ready To Go

HODGE & HAMMOND, INC.
720 Garrison Ave. New York 59, N. Y.
Phone: Kilpatrick 2-2400

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TRANSITS AND LEVELS

New or Rebuilt Sale or Rent

Headquarters for REPAIRS — any make — Factory Service We will also *buy* your old instruments or take them in *trade*.

A complete line of Engineering Instruments and equipment for field or office. Write for catalog NRL 109.

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Manufacturers of Transits and Levels
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RE-BUILT REPAIRS RENT REAL EXPERTS

BUFF

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FOR SALE

1—32x40 Austin Western Roller Bearing Jaw Crusher complete with "V" belt drive, 150 HP electric motor and feeder.

1—20x30 Universal Ball Bearing Jaw Crusher with "V" belt drive and 75 HP electric motor.

1—½ CYD General Osgood Model 200 Dragline, Clamshell and Crane Combination. Gasoline powered. No buckets.

1—TD9 IHC Crawler Tractor with Drott Skid Shovel.

1—D7 S/N 7A 3646 Cat Tractor complete with 7S Dozer and Model 25 PCU.

1—ATECO Heavy Duty Rock Ripper, 2 tooth, hydraulic controls, adapted for TD 24 Tractor.

MANWARING MACHINERY CO., INC.
1202 W. 27th St. Indianapolis, Ind.
WAlnut 3-4535

PUMPCRETE

Current Models Sale or Rent
Engineering Service & Parts
R. T. SHERROD
Concrete Equipment Company
Jones Island, Milwaukee 7, Wis.

High Speed in 6x6's
NEW ISSUE TRUCKS
GMC! MACK! REO "Eager Beaver!"
• Tandem Axle • Front Wheel Drive
For specifications, prices, delivery, write
MEMPHIS EQUIPMENT COMPANY
P.O. Box 2852, Dept. E., Memphis, Tenn.
NATION'S LARGEST ARMY TRUCK DEALER!

EUCLID SCRAPERS

6—14 TDT's, 18 yard Scrapers Good condition; $15,000 each. Located in Central Illinois.

Minnesota Branch
EUCLID DIVISION, GMC
3305 Republic Ave., Minneapolis 26, Minn.
WEst-9-2646

FOR SALE

Model 1005 Long Crawler Koehring Crane

19' overall length x 42" treads; 120' boom and jib; Cummins Diesel-Torque Converter; used for steel erection only. CONDITION PERFECT—Firm Price $60,000. Located within 100 miles New York City.

CONSTRUCTION EQUIPMENT CORPORATION
Long Island City, N. Y.

BIRMINGHAM ROTARY CAR DUMPER
80 Ton Capacity, 41' long, standard gauge, very good, **$20,000**

JOY 692 CFM STATIONARY COMPRESSOR
WNO112, w/100 hp. 220/3/60-built-in electric motor, 2-stage, 125 psi, late mdl. excellent. **$6000**

WENZEL MACHY. CO. 565 S. 10th
Kansas City, Kans. Mayfair 11710

FOR SALE

7 Ton Gantry Electric Traveling Crane
180' Span plus extensions of 90' & 60' cantilever
Height 76' above rails. Motors 3/100—2/20 HP—
Arranged for bucket or hook lift
Excellent for Barge Handling coal, lumber, sand, ore, gravel.
PRICE: Fraction of cost—Immediate delivery—New York City

FS-5354, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

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DRAGLINES, SHOVELS, CRANES, DRILLS, TRUCKS

15-W B.E. Elec. Drag, 215', 12 yd.
450-W B.E. Diesel Drag, 165' w/extra 10, 12, 13 & 14 yd. buckets.
9-W B.E. Elec. Drag, 165', 10 yd.
9-W B.E. Diesel Drag, 165' 12 yd.
7-W B.E. Diesel Drag, 140', 7 yd.
7400 Marion Diesel Drag, 175' 13 yd.
7400 Marion Elec. Drag, 175', 12 yd.
1855 P&H Diesel Drag, 130', 10 yd.
625 Page Diesel Drag, 160', 9 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W B.E. Diesel Drag, 125', 6 yd.
2400 Lima Elec. Drag, 130', 6 yd.
2400 Lima Diesel Drag, 130', 6 yd.
4500 Manitowoc Drag, 120', 5 yd.
120-B B.E. Elec. Drag, 115', 5 yd.
71-B B.E. Crane with 160' boom
3900, 3500 & 3000 Manitowoc Cranes
111-M Marion Drag, 100', 4 yd.
1055 P&H Diesel Drag, 80', 4 yd.
1601 Lima 4 yd. Shovel/Drag
1201 Lima Drag, 85', 3 yd.
54-B B.E. Drag, 85', 2½ yd.
5560 Marion 26 yd. Elec. Shovel
190-B B.E. 8 yd. Elec. Shovel
151-M Marion 7 yd. Elec. Shovel
1600 P&H 6 yd. Elec. Shovels
170-B B.E. 6 yd. Elec. Shovel
4161 Marion 6 yd. Elec. Shovel
2400 Lima 6 yd. Std. & H.L. Shovels
120-B B.E. 4 yd. Elec. Shovel
1055 P&H 3 yd. H.L. Shovel
111-M Marion Std. & H.L. Shovels
1201 Lima & 54-B B.E. Standard Shovels
#6 Northwest 1½ yd. Standard Shovel
Model T-650 REICHdrill Truck Mtd. Rotary & Down-The-Hole
Ingersoll-Rand Truck Mtd. & Crawler Mtd. Drillmasters
Keystone #50 Truck Mtd. Stardrill
Euclid Trucks, Rr. & Bottom Dump; Dozers, etc.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazelton Nat'l Bank Bldg.
Hazelton, Pa. GLadstone 5-3658

FOR SALE

Located in Central United States:

Plymouth 5 Ton Locomotive, 24" gauge diesel
Eimco #401 Air Locomotive, 24" gauge
20—2½ c.y. Dump Cars, 24" gauge with couplers

Located on East Coast:

4 Conway, Type 75, Mucking Machines
1 Double Drum Wellman-Seaver-Morgan Hoist, 300 H.P.

Located on West Coast:

8—60E12 Diesel Electric Joy Shuttle Cars
4—J.S.L.—7 Joy Loaders
1—430 K.W. Generator operated by four 4—71 G.M. Diesel Motors including Switchgear
12,000' of 36" steel Fan Line, Spiral Weld with Couplings
20,000' of 6" steel Spiral Welded Pipe with Couplings
4,000' of 4" steel Spiral Welded Pipe

FRAZIER-DAVIS CONSTRUCTION CO.
1319 Macklind Avenue St. Louis 10, Mo.

FOR SALE OR RENT

1—Cleveland Heavy Duty Mesh Bridge 20'-25' width 4 single flanged wheels—New
1—Marion 35-M Truck Crane with 60' boom—New
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FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila., 31, Pa.
TRinity 7-5200

FORSYTHE
EQUIPMENT CO., INC.
MANITOWOC
SPEEDCRANES
RENTALS
Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals
Exeter 2-6125 37-11 Vernon Blvd.
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FOR SALE OR RENT
AMERICAN REVOLVER R-15 WHIRLEY GANTRY CRANES.
25 TON IND. BH. #5 DIESEL LOCO. CRANE.
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Editorials

Importance of Site Selection

WHERE TO LOCATE is always a vital question for a building owner, whether his is to be an industrial, commercial or public building. Accessibility, availability of a suitable work force, utilities, fire protection, foundation conditions, water, nearby housing—all these are very important. And there is also the question of the effect the proposed facility will have on its surroundings.

Will the business or work to be performed in the building in any way upset the decorum of the community? Are there health or safety hazards that selection of this particular site will cause for those around the building or doing business in it?

This week in New York City the extreme importance of site selection, including relationship with the community selected, was brought home forcefully as leaders from all over the world converged upon the headquarters site the United Nations had selected back in 1946. Despite some opinions to the contrary, the choice was a good one when it was made and probably couldn't be improved on today. It nevertheless emphasizes with what care site selection should always be approached.

Never Underestimate the Power

ALL THAT'S PREDICTABLE ABOUT HURRICANES is that they are unpredictable, no two are alike—which is obviously why they are given feminine names. Mere men who would build to resist or control them have not one simple type of creature against which to defend.

Take Donna (ENR Sept. 22, p. 44). She clobbered the Florida Keys, sideswiped the South Atlantic Coast, battered New Jersey beaches, took a whack at New York and went racing off to New Brunswick. Where do you defend? What's the defense?

But why take Donna at all? She's come and gone, and there may never be another precisely like her. What will next season's devastating darlings do? Where will they go? Will they drench or just blow?

Depending on where each hurricane goes, the defense has to be different. It's reinforced block for houses; it's levees and pumps; it's jetties; it's barriers across tidal estuaries; it's floodwalls; it's flood-plain zoning, it's straightening streams and clearing them of obstructions. Key West to Kennebunkport, the defenses differ.

A strong enough wind on an unprotected Lake Okeechobee would blow it as coffee from a saucer; the same wind teamed with tides on the Jersey shore has the ocean spilling around houses and over roads into Barnegat Bay. A given rain on Long Island does its damage by inundation, saturation; the same rain in the watersheds of New England sends normally tame streams wildly racing through towns, taking out buildings and bridges.

The defenses, however varied, are known. And the hydrologic data on which to base them are available for many areas. Under the 1960 Federal Flood Control Act, passed in July, the Corps of Engineers, on request from the proper authorities, can extract pertinent information from the voluminous data it has on file, supplement it where necessary and put it in usable form for state and local government agencies or engineers they retain.

The Corps' services might consist of mapping flood plains or making hydrology and flood-frequency studies necessary to determine flood heights and the areas that would be inundated. The Corps might also supply information on current velocities, minimum cross-sections, etc., to aid local interests in establishing right-of-way lines, stream clearance lines and building codes.

We have not seen all the tricks of these tropical troublemakers. There may always be one hurricane against which our defenses won't work. But in so many cases now, it is carelessness, not ignorance, that must be blamed for repeating fatal errors of the past.

WPCF Stands for . . .

THERE ARE TWO NAMES under the picture on our cover this week. The first name, R. E. Lawrence, is known to civil and sanitary engineers all across the country, for it's the name a very friendly and effective individual has borne through some 35 years of active professional life. The second name, the abbreviation WPCF, is not nearly as widely known as it should be for it has existed only since the start of this year.

WPCF stands for Water Pollution Control Federation, the new name for what was previously the Federation of Sewage & Industrial Wastes Associations, FSIWA —which in turn had previously been more simply FSWA, the Federation of Sewage Works Associations.

The earlier change, which came in 1950 when FSWA was 23 years old, introduced industrial wastes to the Federation's name in recognition of members' interests in these as well as in domestic sewage disposal. The latest change accentuates the positive and recognizes that whatever the source or nature of the waterborne wastes they combat, water pollution control is what the Federation's associations and their members have as their purpose. (This change also recognized that no matter how callously sanitary engineers can discuss sewage, their wives, who join them in Federation conventions, and the general public, whose recognition and support the Federation needs to achieve its objectives, remain somewhat sensitive on the subject.)

WPCF stands for a far better name than did FSIWA. It's a name with purpose; it should endure. Whether it does or not, it is a new name that must be learned and recognized by civil and sanitary engineers in the U.S. and beyond. And if having a good man at the helm of the outfit in its first full year with the new name can help gain recognition for it, the WPCF picked a good name when it picked Ray Lawrence.

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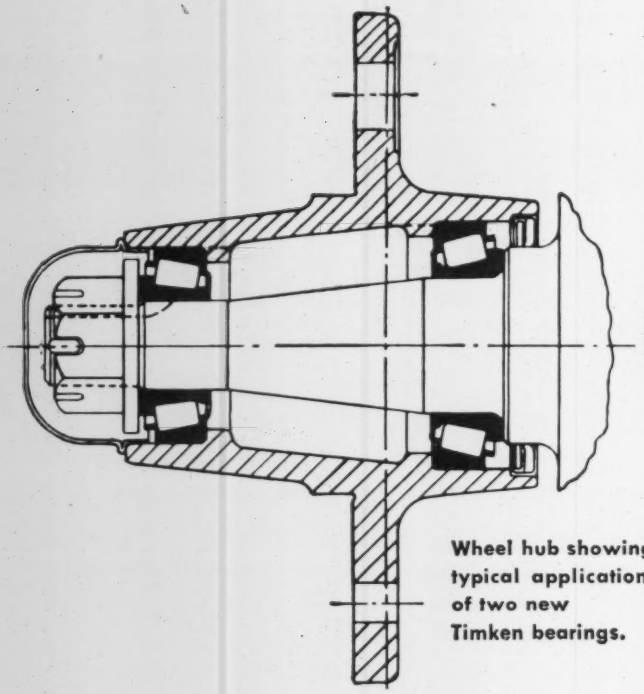

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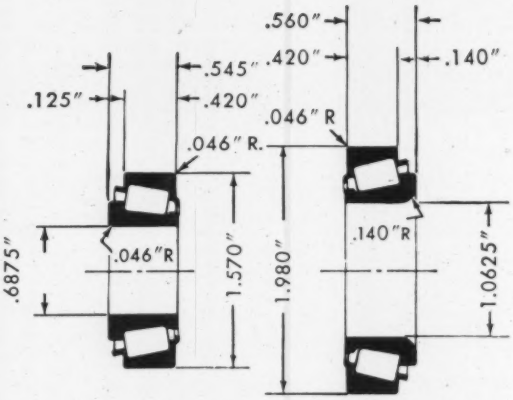

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